

Examining Socio-Ecological Changes associated with Coal Mining on adjacent communities in KwaSomkhele, KwaZulu-Natal, South Africa.

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Submitted in fulfilment of the academic requirements for the

Degree Of

Master of Science

In the Discipline of Geography, School of Agricultural, Earth

and Environmental Sciences

University of KwaZulu-Natal, Pietermaritzburg Campus

Pietermaritzburg, 2022

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DECLARATION

I, **Oscar Gwala (213531236)**, hereby declare that this master's dissertation entitled: **Examining Socio-Ecological Changes associated with Coal Mining on adjacent communities in KwaSomkhele, KwaZulu-Natal, South Africa.** is the result of my research, assessment, analysis, and investigation. This dissertation has not been submitted to any extent for any other degree or any other institution. All citations and references have been acknowledged to the best of my ability. The University of KwaZulu-Natal provided ethical clearance for this research. This dissertation is being submitted for the degree of Master of Science in Geography in the College of Agriculture, Engineering and Science, University of KwaZulu-Natal, Pietermaritzburg, South Africa.

Signature:



Date: 13 July 2022

Supervisor



Date: 13 July 2022

Acknowledgements

I want to thank my family and friends who have provided me with their support during my studies. Furthermore, I would like to thank my supervisor, Dr Adrian Nel, for his assistance and guidance in my academic career and research. I further extend my thanks to the Moses Kotane Institute (MKI) for their financial support. I want to thank Sheila Berry, who welcomed and assisted me when I had no idea how to get to KwaSomkhele; what a kind and caring human being she is, may God grant her more years of love and prosperity. I thank Sabelo Dladla for playing a massive role in providing me with relevant information and support. Additionally, I thank the Mpukunyoni community for participating in this study, giving me a warm welcome and a better understanding of my research.

“Ukungazi Kufana Nokungaboni”

Not knowing is equivalent to not seeing.

In life, we learn something every day, some will learn the hard way, and some will lose everything they possess to acquire their lessons. No individual can claim to understand life fully. Still, we are all in possession of puzzles that can build and make a bigger picture, accompanied by wiser decisions and better judgment.

Abstract

Debates about the distribution of mining industry benefits, relative to the costs they impose on proximate communities occur not only in South Africa but worldwide. Is coal mining an essential tool for economic growth, or is it as some put it a curse for the future generation? Are community members benefiting adequately from the mining industry? Or do the state and foreign companies that invest in African mining projects benefit disproportionately from the externalities they impose? It is projected that South Africa has the sixth-largest coal reserves in the world, with close to 30 408 million tons of reserves. This thesis investigates the political ecology of the mine, and issues, costs and socio-ecological changes imposed by the Somkhele anthracite mine, owned by Tendele as a subsidiary to Petmin, in, KwaMpukunyoni, KwaZulu-Natal. A 'job creation discourse' is presented by the mine concerning its role as a development actor and the jobs it creates for locals. However, local and international civil society have raised concerns about the impact of the mine and the distribution of its benefits, particularly the expansion of the mine over an area of 222km² adjacent to a critical conservation area; the Hluhluwe-uMfolozi national park. This thesis details anticipated, and actual social, economic, and environmental changes imposed by the mine for proximate residents, based on key informant interviews and household surveys in five different communities around the mine. Individual households are selected as the primary sample unit between five different communities Emachibini, KwaSomkhele, eDubelenkunzi, KwaMyeki and Ophondweni. The researcher purposively samples 20-25 households per village for the questionnaire surveys, therefore, having a sample size of approximately 80-100. Findings indicate a discrepancy between a Job discourse on how the Mpukunyoni community benefits, and how proximate villages experience the reality on the ground and highlight a range of risks and externalities related to pollution and environmental degradation borne by the communities. The thesis then goes on to describe the subjectivity of the mining-affected communities as environmental subjects in Mpukunyoni. It argues that understanding the experience and subjectivity of mining-affected communities is important in the broader mining geography of Kwazulu-Natal and South Africa

Chapter 1

Introduction

This chapter includes six sections that will cover; the research context and scope; followed by the research problem identification; thirdly, the motivation of the study section will be addressed; fourth, the research goal and objectives; fifth, an introduction to the literature underpinning this research; and sixth, an introduction to the research methods.

The development model associated with mining is termed Extractivism by geographers (Gudynas, 2013). Extractivism is the procedure of extracting raw materials from the ground, which can benefit the development of the country's economy. It can also be referred to as the "development model" which organizes how the marketing of export resources is utilized at the grass-root level; these may be "political, economic, and cultural relations within the respective country or region". Gudynas (p165, 2013) mentions that the focus of extractivism is rooted in Latin America which began as a school of thought. Coal mining is a key extractive activity, which generates enormous income that boosts the country's economy (Mathu and Chinomon, 2013). There has been a dramatic increase in the energy sector, with the rise of the global demand and resource extraction for fossil fuels, especially in developing countries. Countries such as India, China, Germany, the United States, and South Africa are increasing their coal consumption and production due to their industries' development and their economies' energy intensity (Gomez and Regaignon (2015).

South Africa's economy is rooted in an energy paradigm known as a minerals-energy complex. It is viewed as a system of accumulation, which encompasses several core economic sectors and has a determining influence on economic performance and industrialization patterns. It is estimated that South Africa's coal reserves are close to 30 408 million tons, making it the 6th largest coal reserve around the globe. The Coal Reserves are found in Mpumalanga, Free State, Limpopo, Kwa-Zulu Natal, and Limpopo coalfields. "The South African coalfields are mainly concentrated in the Mpumalanga coalfields, where most coal-fired power plants are situated" (Mathu and Chinomon, p4 2013).

According to Jeffrey et al. (2015), mining in South Africa accelerated in the 18th century with a shift from agricultural practices as the primary source contributor to the country's GDP through mining. Coal mining was documented between 1838 and 1859. Its primary provinces

of discovery include Eastern Cape, KwaZulu-Natal, and Mpumalanga. The first commercialization of coal commenced near Molteno in the Eastern Cape in 1870. The discovery of diamond and Gold resulted in the increasing coal demand, resulting in newly established mines in the Witbank in 1895 and Vereeniging in 1879 (Pooe and Mathu, 2011). The apartheid system meant that the dominance of the white minority over the black majority resulted in long working hours. Black miners were then compelled to live in corporate housing near the mine. This put a significant burden on black families left in the rural areas. The wages were extremely low for black mine workers compared to white workers. During the apartheid era, mining was not easy for the black people of South Africa, the company housing for black employees was filthy and overcrowded. The meal served by the mine owners was of average quality and there were high mortality rates, this meant that there were a lot of deaths due to major accidents such as pneumonia, TB, silicosis, and hunger were all exceedingly common. It is estimated that one in every tenth of black mining workers died each year.

With such pressure from coal mining development, resource depletion is experienced (Jeffrey et al. 2015) and there have been concerns about the coal burnt from power stations, the coal residuals, and its effect on the surrounding communities. Coal mining can put a tremendous amount of pressure on the environment. Hallowes and Munnik (2016) mention that coal contributes to climate change when burnt in power stations and industrial furnaces. South Africa is one of the highest energy usage and carbon-concentrated countries around the globe (Fine and Rustomjee 1996). There are two fundamental reasons for high emissions and carbon intensity in South Africa: the supply of cheap electricity to electricity industries through the policy and relying on coal as its primary energy source. It is estimated that greater than 75% of South Africa's greenhouse gas emissions result from energy production, and greater than 50% of the energy is released by mining activities and industries (Hallowes & Munnik, 2016). The rising of sea levels, a change in rainfall patterns and crop failures are some of the tangible impacts that are observed globally through the impact of climate change. Not to mention the lack of water availability livestock death, an increase in migration into south Africa and additional health risks. (Intergovernmental Panel On Climate Change, 2007).

The right to a clean environment is constitutionally guaranteed in South Africa, and there is a narrative that mining will create jobs, bring in new businesses, better or enhance education and will result in an improved life for local communities (Tamufor, 2005). But this has been a dominant narrative about mining in South Africa, which is different to the person who is living

in a mining environment. However, mining companies frequently violate this right by degrading and harming the environment in the areas in which they operate. We have seen different cases where the mining companies have broken rules, been taken to court, and alleged assassinations of the mining-affected communities. Holifield (2011) states how environmental justice looks at environmental issues and incorporates them into the wider institutional and intellectual framework of democratic accountability and human rights.

Coal mining burdens can be shared by individuals who live near the mine and are referred to as Mining Affected Communities (MAC). There are two types of MAC. Some communities are directly affected by mining activities and some communities are indirectly affected by mining. These communities are at risk of having a low mortality rate due to exposure to different diseases that are associated with mining. Coal mining can occur in ways that can lead to human rights contravention (Mutemeri and Petersen, 2002). In many cases, individual community members can suffer a considerable impact from coal mining, there has been much debate concerning human rights and coal mining (Munnik, 2010). It is mentioned that governments have given the green light to the mining companies without considering the impact on surrounding communities; this has caused a significant impact on people's lives which has resulted in people losing their land (Munnik, 2010). This may result from being removed from the land without adequate compensation, the destruction or removal of cultural features, including gravesites, decreased water security in water-scarce areas due to abstraction, lack of coal cleaning and land degradation (Mutemeri and Petersen, 2002).

Mining-affected communities become environmental subjects through their experiences. Agrawal, (2005) states that environmentality leads to the emergence of environmental subjectivity which directs people to care about the environment. It is also understood that environmental subjects are those individuals whose actions and thoughts are centred around the environment and how they view the environment. Environmental subjectivities analyze the process by which individuals develop and rebuild a set of discursive interactions with nature. The emphasis on environmental subjectivities creates local contexts within which environmental discourse narratives such as Anthropocene (The time frame considered to be a separate geological epoch during which human actions have had an environmental influence on Earth). This will help in understanding how new subjectivities emerge when people's livelihoods and lifestyles are threatened. As Gregory et al, (2011) mention in terms of

subjectivity, poststructuralist theories see it as a complicated interaction of local geography and processes that produce and differentiate an individual subject (Gregory et al, 2011).

Details of the local Tendele mine and allegations focus on socio-ecological changes, relating to the Tendele coal mine from a community perspective at Kwa-Mpukunyoni Near Mtubatuba, KwaZulu-Natal, South Africa the Somkhele anthracite mine, which approximately 85 kilometres Northeast of Richards Bay in northern KwaZulu-Natal, is controlled and owned by Tendele Coal Mining (Pty) Ltd and is a subsidiary of Petmin. It started operating in 2007. This research will look at different discourses and subjectivity underpinning the study area.

There are different Environmental Organizations at the ground level that are working against the Tendele mine operation. These include the Global Environmental Trust, Mfolozi Community Environmental Justice Organization, Mpukunyoni Community Property Association, and Mining Affected Communities United in Action. As mentioned, some stakeholders are working with the mine including Groundwater Consulting Services water and environmental consultant's resources. It is imperative to note that coal mining is an activity that generates significant revenue which boosts the country's economy (Mathu and Chinomon, 2013).

The Tendele mine activities have been investigated by the community organization where there are concerns and issues regarding the initial mining license. There have been claims that the Tendele has built a maternity ward to help the communities. The Tendele coal mine has contended in their Social Labour Plans of 2013 that 80% of the employed individuals are from the community. The Department of Mineral Resources' Regional Manager in KwaZulu-Natal granted a new mining license to Tendele Coal Mine at Somkhele for an area of 222km². According to the local NGO Global Environmental Trust (GET), this new mining license granting did not involve any Environmental impact assessment or Social Impact Assessment of the local NGO Global Environmental Trust (GET). GET states that expanding this open-cast coal mine on the Hluhluwe-iMfolozi Park border will result in prolonged pollution and ecological degradation. There is currently a court case by local and international organizations that no environmental authorizations were issued for any part of the 21 233.0525-hectare mining right area. In such contexts, there is a clear need for a better understanding of the communities' socio-ecological issues in rural areas where mining companies make promises that are not fulfilled and contribute to environmental disturbances (SaveOurImfolozi, 2018). It is very important to understand how the study has included how the community of Mpukunyoni

is affected by the Tendele coal mine activities. These activities will be explained in more detail in the next chapters

1.1 Research Problem

The research problem is that there is a lack of academic studies within the study area and a lack of information in the Mpukunyoni area. There is information from the NGOs and a few academic studies including (Leonard, 2014) and (Edelstein, 2018) but this information is limited, and more community studies should be done in the Mpukunyoni area. The research is exploring how the Tendele coal mining field impacts both negatively and positively on the local village of Somkhele, Emachibini, KwaMyeki, Dubelenkunzi, and Ophondweni. Community members working with non-governmental organizations (NGOs) such as Global Environmental Trust (GET), Mfolozi Community Environmental Justice Organization (MCEJO), and Mining Affected Communities United in Action (MACUA) have alleged that the Tendele coal mine does not address community concerns.

There is a need to scrutinize these opposing accounts with a grounded study of changing conditions under the mining for proximate communities at Somkhele.

1.2 Research questions, goals, and objectives

The purpose of this research is to examine the socio-ecological impacts of coal mining in Mining affected communities KwaMpukunyoni, KwaZulu-Natal, South Africa.

This research aims to examine the Socio-Ecological Changes associated with Coal Mining on adjacent communities. To achieve the research purpose; three specific associated questions were sought:

1. The Primary aim is to examine the social and environmental changes of coal mining at KwaMpukunyoni, from the perspective of the mine adjacent residents of villages of Somkhele, KwaMyeki, Emachibini, Ophondweni and Dubelenkunzi.
2. The secondary aim is to contrast accounts of change put forward by the mining company, on the one hand, and activists on the other, and compare these with the experiences of the mine adjacent communities.

3. The third aim is to interpret changes in the Mpukunyoni through the political ecology approach. The related objectives are to understand the changes associated with mining-related to

- reported environmental changes over time,
- changes in local livelihoods as reported by proximate communities
- reported changing social relations between traditional authorities and adjacent communities.

The following questions guide this research:

1. What are the social-economic and environmental impacts of the Tendele coal mine in Somkhele? From the perspective of the respondents?
2. What are the Communities' perspectives of different stakeholders in the mining-affected communities?

1.3 The motivation and significance of the study

According to Harrington et al (2003) coal mining is an activity that has brought much change in South Africa, especially to disadvantaged rural South Africans due to being vulnerable to the impacts of this activity. The amount at which this coal is consumed is problematic due to its environmental impacts. South Africa's mining sector contributes about eighteen percent (Stats SA, 2011) based on the National Gross Domestic Product. This sector is over a century old (Harrington et al., 2003) it is estimated that the mining sector creates 50 000 direct jobs and approximately 500 000 indirect jobs. This sector is recognized for economic upliftment and its given contribution to job creation and employment. In 2013 Jacob Zuma, then the president, in his state of national address, conceded that mining is the main contributor to the economy (the presidency: Republic of South Africa, 2013). Coal mining has a history of cheap labour, with cheap labour comes with significant risks and responsibilities (Munnik et al, 2010). There is a lot of politics surrounding the mining industry, and South Africa is a politically orientated country (Munnik et al, 2010), Where power and politics are used to influence mining decisions in south Africa. My motivation to pursue this study started during the undergraduate phase when I was exposed to the Marikana shootings. I felt the need to know more about the mines,

understand the people's needs and understand how mines function beyond the scope of a thesis and the communities will benefit. Based on the idea that engaging in this study will bring awareness to the consumption of this resource and try to promote environmental awareness programs to coal mining-affected communities to understand the nature of coal mining. This can be done by ensuring that mining authorities follow proper channels and proper procedures and that the adverse effects of coal mining on the surrounding communities of the Tendele coal mine are adequately attended to and investigated for future reference.

This research's problem statement addresses the lack of academic studies within the study area and how they need to research the Tendele coal mining field impacts both negatively and positively on the local community of Mpukunyoni. The need to scrutinize these opposing accounts with a grounded study of changing mining conditions at Mpukunyoni. It has been evident that coal mining has effects on the livelihoods of the people.

Most mining firms' narratives in South Africa and around the world are built on economic upliftment, job creation, and a better lifestyle for local communities. However, this is not always the case, as communities have taken mining companies to court and many protests have occurred due to community dissatisfaction (SaveOurImfolozi, 2018). The issues facing developing countries are diverse and difficult to generalize. At the moment, the only laws on possible environmental and occupational safety hazards in the mining sector are those imposed by national governments. However, these policies vary by country, and many companies find ways to get around these legal obligations by lobbying and, in some cases, bribery. For instance, the Mineral Petroleum Resources Development Act (MPRDA) of South Africa established the state as the custodian of all mineral resources in that country through the minister of mining. Through its national and regional offices of the Department of Mineral Resources, the MPRDA governs the mining industry (DMR).

We have witnessed how mining firms have violated this regulation, resulting in protests and court battles, such as the Amadiba Crisis in Xolobeni (Huizenga, 2022). Where for nearly 20 years, a community has fought to prevent an Australian mining business from destroying their ancestral land to extract mineral sands. This action resulted in the death of an environmental activist. This sparked protests and widespread dissatisfaction with the government and policies aimed at assisting communities.

Leonard, (2014) states that mining practices are situated in rural areas where this resource extraction negatively impacts the communities. Since most of the researched areas are in rural areas it becomes a research problem because with negative effects at play, the mining operations, and residents suffer the most. Moreover, the dust negatively impacted these villages. The research problem within the study is the lack of academic information available, on these issues mentioned above. If more research studies are conducted in the area a lot can be uncovered and it will provide residents with something that can be a true representative of their lifestyle adjacent to the mine.

1.4 Case Study approach

This study is based on a descriptive analysis method. Descriptive analysis characterizes the world or a phenomenon by providing answers to questions such as who, what, where, when, and to what extent. Whether the goal is to discover and characterize trends and variation in populations (Loeb et al, 2017). The primary reason for employing descriptive analysis is to collect data obtained during fieldwork and analyze the data to seek associations or patterns that emerged during data collection. The focus of this study was on community perceptions and local levels of environmental degradation, as well as attitudes and knowledge about issues like conservation, environmental degradation, air pollution, and climate change. The goal of descriptive research is to describe how reality is.

There are different research methods used to examine the changes affecting communities at Mpukunyoni by the Tendele coal mine. In this research, data collection is extracted from primary and secondary sources. The study collected primary data using qualitative methods, these include observations, questionnaires, oral testimonies, and semi-structured in-depth interviews. The research explores the impacts that the community members face in the case study context because of the coal mine operations.

1.5 Political ecology approach and mining

Political ecology provided this thesis with a vital approach for examining socio-ecological changes associated with coal mining in adjacent communities and addressing power, contestation, and scales of interaction.

The term political ecology has a long history; its first emerged in the 1970s and 1980s as part of geographers' and anthropologists' efforts to incorporate environmental change and political-

economic forces in their studies. “This was in response to perceived neglect of the environment amongst the economists, and it was also part of the neglect of political economy between human ecologists”. Political ecology has grown steadily since the 1970s; it is a widely accepted field contributing to understanding human-environment interactions (Scott, p703 1985). Scott (1985) explains that Political ecology is understood as a transdisciplinary field that studies the political change that embodies the material struggles over the environment. It includes different scholars across the social science and humanities and the disciplines of history, anthropology, and geography.

It is critical to understand how power is perceived and applied in political ecology. In terms of scholarly perspective, it is understandable that power is at the core of political ecology. “Paul Robbins defines Political ecology as an empirical, research-based exploration to explain linkages in the conditions and change of environmental/social systems, with explicit consideration to relations of power” (Robbins, 2004, p12). Robbins emphasizes that political ecology views social and environmental transformation through a prescriptive lens with the knowledge that there are less exploitative and more sustainable methods of carrying out tasks (Robbins, 2004). In this thesis, political ecology is applied with critical tools to approach the study of examining socio-ecological changes associated with coal mining in adjacent communities and addressing issues of power, contestation, and land disturbance. Political ecology aims to provide an insight into how it is to live under a politicized mining community in South Africa in the 21st century.

The political ecology approach addresses the connection between nature and society, arguing that both the environmental and social dimensions are interconnected (Adams and Hutton, 2007). “It analyses how ecological processes correlate and how this may, in turn, impact and resolve both environmental and social change” (Nygren and Rikoon, p768 2008). According to Nygren and Rikoon (2008), the political ecology framework emphasizes how communities utilize local resources with broader socio-political and economic contexts and how control and access to natural resources are negotiated and contested. With a strong influence from Marxist thinking, the political ecology framework widens its scope to analyze political and economic contexts and acknowledges specific locality and heterogeneity of ecological conditions under analysis (Jones, 2006).

Political Ecology is broad and encompasses environmental justice. Environmental justice is explained as a social movement where the environmental benefits and burdens are shared fairly

and equitable (Schlosberg, 2007). It looks at the relationship between the environment, society and power dynamics or power exchange.

In terms of coal mining and political ecology, there is much power as explained above how power plays a role in political ecology as a scholarly approach, within the community of Mpukunyoni and the project managers. The political ecology approach to mining looks at how mining activities are influenced by power relations and focuses on how society and the environment interact (Svarstad, 2018). Coal mining is known as a process of extracting raw materials from the earth. This resource poses an essential role in shaping the lives of the local community residents in mining adjacent areas. Since the extraction of these resources brings vast revenues to the countries involved, the local economy is boosted. The political ecology approach investigates environmental subjects. There are different power dimensions within the mining industry and how much power is distributed in taking and implementing environmental decisions that can benefit the local communities through job creation or be a detrimental effect where the environment is affected tremendously. There is subjectivity and contestation within the Mpukunyoni community. Subjectivity refers to how individuals of a community communicate their feelings, concerns, and frustrations about living in a mining environment. Furthermore, contestation addresses the problems that cause conflict amongst the community of Mpukunyoni because a lot of people have been affected and there is division amongst the community members which makes the Political Ecology approach a vital tool to address these issues. Martínez-Alier (2002) illustrates that one of the significant contributions of political ecology is to deeply look at ecological distribution conflicts. Robbins (2004) explains that “ecological distribution conflicts refer to struggles that appear from structural asymmetries in distributing the burdens of access to natural resources, the population, or the sacrifices made to extract those resources”. The majority of these disputes are caused by social inequality based on race, social class, or wealth disparities. According to Martnez-Alier (2015), a political ecology perspective reveals the trade-related conditions, the physical issues with global trade that exist throughout the South, and the conflicts over ecological distribution that are related to those conditions.

In conjunction with the political ecology approach, it is important to note that environmental justice is important as it will address the importance of treating people fairly. “Environmental justice is the fair treatment and meaningful involvement of all people concerning the development, implementation, and enforcement of environmental laws, regulations, and

policies. Fair treatment means that no population bears a disproportionate share of industrial, municipal, and commercial operations” (Holifield, 2011). Furthermore, a call for the government ensures that environmental laws are practised, and biodiversity is conserved (Holifield, 2011). This theory will be used in explaining and exploring the environmental impacts that are associated with coal mining. By assessing the power relations that exist in the researched community and how power influences the decisions taken for the community by the community leaders, also analysing how these decisions influence and shape the environment and society at large.

1.8 Organization of the thesis

This dissertation is divided into six chapters.

Chapter 1 Introduced the relevant background and provided a context in which the study is conceptualized and located. It also provides the aim and objectives of the study and a brief overview of the methodological approach.

Chapter 2 This chapter includes significant literature that informs the study process. The literature on coal mining and its impact on society, mining-affected communities, environment, and economy in South Africa and abroad. It also introduces the theoretical approach to the study.

Chapter 3 provides the framework, methodological approach and research design that guided the study. This chapter describes the study site, data collection techniques, sampling frame, sampling size analysis, and study limitations.

Chapter 4 gives contextual information on the study area. This chapter provides an overview of various stakeholders as well as an overview of coal mining in KwaMpukunyoni. Discourse analysis is explained in the context where it is used. There is a dominant discourse (job creation discourse) and a counter-discourse (environmental conflict discourse) that underpinned the research. An explanation of the TPSN framework and how it relates to the study area. The TPSN framework is known as territory (T), place (P), scale (S), and network (N). The overall impacts are explained.

Chapter 5 presents the description of the data followed by subsequent analysis. Findings from the data analysis indicate that there are discrepancies between the way Tendele coal mine represents its operation and the communities experience analysis results indicate that the Tendele coal mine's socio-ecological impacts harm the directly affected community of Somkhele. It also focuses on the subjectivity of the people of Mpukunyoni to an adjacent mining area.

Chapter 6, the concluding chapter, lists the summary findings and recommendations of the study for future research. This draws the main argument of the thesis looking at the dominant discourse and the counter-discourse and how subjectivity in a coal mining environment influence and shapes the livelihoods of the Mpukunyoni residents.

Conclusion

This study seeks to establish not only the discrepancy between the way the company (Tendele) portrays the operation and its benefits to the community but to examine the way proximate communities experience the reality on the ground, and highlights a range of risks and externalities related to pollution, environmental, and societal changes. The data and key findings emanating from the proposed study will hopefully improve understanding of the community-level dynamics, which may be used for future projects undertaken within the community or under a similar socio-ecological setting. The next chapter provides an overview of the literature review that guided this study and informs an understanding of coal mining.

Chapter 2: Literature review

Introduction

There are different ways to understand the impact of coal mining in South Africa. Different authors have investigated the impact of coal mining on different communities around the globe. Coal mining is an activity that brings huge revenue into the South African economy. But these natural resources come with an environmental, social and cultural cost to the local communities. Mathu and Chinomon (2013) suggest that coal mining is considered to be one of the most dangerous industries in the world. Different dangers are associated with coal mining. Some include the disturbance of the environment, contamination of groundwater, changes in the livelihoods of the directly affected communities and a change in the social environment. A literature review is a collective of surveys, academic authors, books and journals from different scholars investigating a particular problem.

When there is a positive impact on the country's economy, the extraction of natural resources is deemed important and necessary. Gudynas (2013) mentions how local communities benefit effectively from these activities through job creation and a better livelihood. This chapter will explore different literature from various authors tracing back in time to understand the patterns of extractivism (extracting raw materials), which can benefit the country's economic development with more jobs created thus improving the livelihoods of the locals, emphasizing coal mining. It can also be termed a development model, which organizes the marketing of resources to export and a foundation for the utilization of socio-economic, cultural and political relations (within the relevant region or country) mostly coal mining.

Historical references on how coal mining became a commodity in South Africa give a better chance of understanding this commodity's impacts on the natural environment, society, the country's economy and the local communities (Synaman and Botha, 1993). It is documented that mining may have indeed started in Neolithic times (Reardon, 2011). Many mines were exploited to produce iron, copper, gold, lead and other different metals, evidently in Greece and the Roman empire. Many old mines are known to this day; some have been operated over and rediscovered (Lozano et al., 2015). Through time there has been an increase in the extraction of raw materials such as coal and metals through mining. These resources were extracted in quantities and involved a significant workforce. Mining activities are very distinct

and diverse, which may leave different ecological footprints. With such footprints, full recognition of human health and environmental impacts has become more visible, leading to significant legislative developments surrounding the environment.

However, in the study area, it is alleged by NGOs that “For the year 2013/14, 1,1 million tonnes of coal were extracted (SaveOurImfolozi, 2018). The coal both feeds South African national industry and it is exported”. This information gives a brief overview of which years the mine increased its profit margin. This chapter will briefly review the literature on mining geographies and emphasize coal mining in South Africa. Different scales of coal mining will be presented in support of the aim of this chapter, which is to map out literature from different scholars about mining and coal mining using political ecology as a supporting framework. Political ecology will provide a particular lens on coal mining and enable an analysis of how this activity has influenced the livelihoods of adjacent communities to coal mining projects.

In this chapter, the review of literature entails background sources and literature that applies to coal mining for better understanding and analysis. Section 2.1 gives an understanding of the geographies of mining. Section 2.2 gives an overview of the mining industry in South Africa. Section 2.3 Explores coal production in South Africa. Section 2.4 contains tools to measure the impacts of coal mining in South Africa. Section 2.5 details an understanding of the environmental impacts of coal mining. And an understanding of the effects coal mining has on the communities and livelihoods. Section 2.6 provides information on the ecosystems and health effects. Section 2.7 gives us an understanding of air quality. Section 2.8 provides an understanding of the South African legislation on coal mining. lens Section 2.9 Elaborates on the political ecology approach. Section 2.10 provides a deep analysis of environmental conflict and mining through a political ecology. Section 2.11 presents an analysis of environmental discourse and subjectivity which will be further explained and applied in chapter 4.

2.1 Geographies of coal mining

Geographies of mining look at the locations of raw minerals in different parts of the world and what different factors influence these raw minerals (Bridge, 2004). For example, in locating coal mining reserves, gold minerals reserves, copper and more. geographers need to pinpoint the location of these reserves and see their demand in the market. Moreover, how these reserves will contribute to society and the economy. this section will present literature from different geographers looking at coal mining. A brief history will be introduced followed by how coal

mining is experienced in different countries. It is essential to know that coal mining in different parts of the world has influenced different countries in different ways. It is important to understand how different parts of the world experience coal mining as a catalyst to understanding its benefits, dangers and similarities associated with coal mining.

According to Moosa and James (2013), from time to time, there has been other literature on coal mining all over the world. Some see coal mining as a fossil fuel that is extracted carelessly, while some see it as a curse to the environment. Moosa and James (2013) look at the effects of coal mining on geomorphologic processes; they mention the relationship between geomorphology and extractivism. Different geomorphologic systems, like weathering, exist, influenced by the extraction of any fossil fuel. It is further mentioned that removing surface sediments and vegetation includes activities such as dumping unusual material blasting. This increases slopes and erosion also floods. Some of these geomorphic hazards have been created because of mining, and with these hazards, mining negatively influences landscapes that are relevant in some parts of the world. (Moosa and James, 2013). There are different ways in which coal can be extracted according to Wilson, (1972) there is a vast amount of coal extraction from open cast mines, which amounts to 53%; an open cast mine occurs with the cover of the topsoil being removed the overburden is blasted into stockpiles, and the coal is subsequently blasted and removed. The removal is done using shovels and trucks or with a dragline excavator. This process is then rehabilitated, in rehabilitation processes, the rock segment is returned to the pit, followed by the stockpiled topsoil, to restore the original surface as practically possible. Wilson, (1972) further explains that the site is landscaped, and the original vegetation type is replanted.

The underground bord and pillar operations are another form of coal mining constituting 40% of its total. This type of coal mining occurs when some of the coal is extracted, while the remainder is left in place as pillars to support the overlying rocks (Jeffrey et al., 2015). A partial pillar extraction may be done just before the end of the mining process to win additional coal, but a considerable amount of coal is left in the ground. If sufficient support is left, the roof rocks can remain stable. Finally, continuous miners, shuttle cars conveyor belts are used to remove the coal and stop mining” (Wilson, p387 1972).

In the past 45 years, there has been a significant transformation in the world's minerals industry as it increasingly operated in a new and liberalised economy. The leading cause of this transformation is due to technological innovations (Remy, 2003). Chile became a pioneer in

the early 1980s when it reworked its mining policies, where there was a complete transferability of mineral rights. In addition, non-discretionary rules were adopted, which applied equally to the private and public. Over this time China has become the biggest producer, consumer, and exporter of coal in the world (Stracher, 2007). In 1999 China's annual coal production averaged above 1.4bn tonnes, with an increase to 1.9bn tonnes in 2004. whereas in Chile, coal production fell progressively from 2.19 million metric tons in 1990 to 0.36 million metric tons in 2000. The total energy supply of electricity in China through coal was 74% in 2003, showing the importance of coal mining in China (Stracher, 2007). The United States and Russia are rank second and third in terms of coal reserves.

Air pollution in China has been a significant effect of coal mining and coal burning. Since 2003 the government has made countermeasures where 19 coal power plants were stopped because they did not meet the standard and environmental criteria (Stracher, 2007). Coal mining in China often occurs along the north coal belt, extending 5,000 km from the east to the west. China has different coal qualities ranging from sulphur and high ash to highly quality anthracite, allowing this quality to be exported to the world market. Although coal mining has its advantages and disadvantages. The effects of coal mining range from the disturbance of the environment due to coal mining and coal transportation. This includes the acid rain experienced in China as the level of sulphur dioxide increases through coal burning.

In 2005 and 2006, coal was used to create around 51 percent of electricity in the United States of America (Kecojevic and Grayson, 2008). However, because it is a transition industry, production in 2019 was down 40% from the 2008 record of 1,171.8 million tons (1,063 million tons). Coal produced in the United States of America was used in power generating plants; some of the data showed that some states in the USA relied on coal for electricity production. An example would be in West Virginia, where 92% of electricity came from coal in 2006 (Kecojevic and Grayson,2008). North Dakota had a 94% of its electricity produced through coal. It is important to note that coal mining production is essential in the economic sector. In the United States of America, coal accounts for at least 94% of the nation's energy reserves. Coal is classified into four different types in the USA including bituminous, lignite, anthracite and sub-bituminous (Kecojevic and Grayson,2008). The methods used to mine such coal in the US are underground mining and surface mining; just like in any other country, the effects of coal mining are the same with adverse environmental impacts, including water contamination

and land degradation where soil pits are left after the mining has commenced (Kecojevic and Grayson, 2008).

Compared to many European countries, the coal mining sector in India is a comparatively recent growth. In the year of 1774, the first published reference to coal mining was documented in India. Sharma (2012) Explain that in India coal is very important and 55% of coal is used for energy. It is estimated that about 75% of the coal is used to generate electricity in India. “It was surveyed in January 2001 that India has 247.85 billion tonnes where 92 billion tonnes are proven” (Sharma, 2012). It is assessed that India has 27 major coalfields which are confined to the east and southern part of India. Coal in India plays an important role as it provides the nation which energy it includes for domestic use as well. Mining in India is a massive boost to its economy which contributes from 2.2% to 2.5% of the GDP of India. Coal has been proven to have a reserve of 286 billion tonnes the most used coal in India is electricity generation. India has the fifth largest coal reserve in the world. Like some countries in the world, India is faced with harsh working conditions with hard labour and long hours; in some instances, children work in some of the mines. Coal mining has contributed dramatically to India's economy, but its effects are felt deeply by the environment (Mudit and Parikh, 2002).

In Africa, the largest coal mining country is South Africa but there are also other African countries with a significant amount of coal reserves including Mozambique, Botswana and Zimbabwe. In Mozambique, it is noted that its coal reserves are in the Tete province. The FIAN international (2010) states that Moatize is known to have the largest untapped reserve in the world. Coal mining first began in 1940 in Mozambique. It is estimated that Mozambique has 23 billion tonnes of coal. A study conducted by (Real, 1966 and Afonso, 1978) led to the discovery of coal in Mozambique. The extraction of coal in Mozambique served as an economic boost where railways were constructed to make it easier to transport the coal. The railways connected Moatize to a Beira seaport. One of the African countries that is too concentrated on coal mining is Botswana. According to Grynberg, (2012) Botswana has an amount of billion tons of coal. There are different coalfields where coal is found, these are namely South-Eastern (Letlhakeng and Dutlwe), Pandamatenge and Tuli. In these two regions, two coal mines have been formally recorded. These two mines are the Masama coal Project situated in southwestern Botswana and the Morupule coal mine. The Morupule mine is estimated to produce 1.5 million tonnes annually and the Masama coal project is estimated to produce 380 million tonnes and it is still being developed (Grynberg, 2012).

2.2 The mining industry in South Africa

In South Africa, coal mining has traditionally been a major source of energy. When dead vegetation is accumulated over a long period of time, it slowly decomposes into peat, which then turns into coal seams. (Mathu et al., 2013). According to Lloyd, (2002), South Africa is a country blessed with tremendous resources and is well-positioned in becoming an international energy hub. South Africa has been impacted by the mining industry, where significant exports have been made to worldwide recognition that attracts more investors while there are detrimental effects to the environment. As mentioned in section 2.1 countries such as India, Mozambique, Botswana and South Africa has a long history of coal mining and produce more than 100 million tonnes of coal per year, but they are still faced with difficulties in addressing African challenges regarding mining production due to the lack of infrastructure and a shortage of skilled mine workers. Mining played a significant role in shaping South Africa through its process between the years the 1800s to 18910 (Lloyd, 2002).

The mining industry has always been profitable and has a long history in South Africa (Jeffrey et al., 2015), South Africa's mining industry is said to have emerged in the 18th century, with the changes in the agricultural sector. These changes left mining as the country's main contributor through the mining of gold, diamond, and coal in the Witwatersrand. Coal mining was popularized first because of its significance for British settlers and, therefore, for global monetary systems and for-profit (Hartnady, 2010). Through cheap black labour, the process of mining was accomplished using migrant labour systems, where mineworkers leave their homes and reside in all male's strictly controlled compounds (Jeffery et al, 2015).

During the year 1980, the Department of Minerals and Energy (DME) was established with its primary motive to regulate and promote mining (Bugaje, 2006). Since gold mining was the centre of attention, coal mining became secondary and played an important role in energy production in the mining industry. According to Pooe and Mathu (2011), the cheapest energy source in South Africa is coal, thus, the leading economic development in South Africa emerged after the Second World War, when newly constructed coal-fired power stations were generated (Wilson,1972). As a result, 70% of South Africa's primary energy is produced by coal thermal coal-fired generators that produce 90% of South Africa's electricity, leaving Sasol coal conversion operation since 1955 to provide close to half of South Africa's fuel liquid requirement. Even with the introduction of nuclear, renewable energy sources, and natural gas,

which contribute to other primary energy sources, coal remains the leading primary source of energy now and in the foreseeable future (Pooe and Mathu, 2011).

A lot of collieries that were historically owned by gold mine companies are today owned and operated by the same coal mining companies (Jeffery et al, 2015). It was essential for the coal mine owners to keep the energy input cost low to profit through coal mining; that is why the coal price remained low until the mid-1970s. With the opening of export opportunities through a deep Richards Bay terminal, the low price of coal was in line with harsh working conditions and low wages for Africans (Jeffery et al, 2015). Nevertheless, the significant mining commodities in South Africa, such as Gold, diamonds, coal, and platinum, have played an essential role in improving the country's Gross Domestic Product (GDP) in the past century (Jeffery et al. 2015, Pooe and Mathu 2011, Mathu et al. (2013).

2.3 Coal production in South Africa

According to Hancox (2014), for over a century and a half coal has been the most important contributor to South Africa's economy. Bituminous coal serves as a primary energy source for generating domestic electricity and the feedstock to produce a substantial percentage of the liquid fuels of the country. furthermore, foreign revenue is provided through exports (Hancox, 2014). Coal is a fossil fuel that is crucial in the supply of energy, and its primary use in South Africa is for electricity.

According to the official statistics Department of Mineral and Energy (DME) in 2015, 77 per cent of primary energy needs in South Africa were provided by coal (Bugaje, 2006). There are different uses of coal in South Africa, electricity generation is at the forefront, which includes the synthetic use of fuel by Sasol (known to be a very unclean process) and lastly uses in homes and industry. South Africa is known to be the fourth-largest coal exporting country in the world using the Richards Bay coal terminal and 28 per cent of coal is exported. According to Jeffrey et al. (2015) "The discovery of coal was in KwaZulu-Natal, Eastern Cape, and Mpumalanga province, and the first documentation of coal was in 1838 and 1859". According to Jeffrey et al. (2015), the commercialization of coal was first initiated in the Eastern Cape in 1870.

South Africa's economy is not only dependent on coal for an economic boost. There is also an agricultural sector that contributes to the GDP of the country, but coal mining plays a significant role in foreign income and as an energy source (Reddick et al., 2008). According

to Peatfield, (2002), the first discovery of coal was in 1699 in South Africa at Fransch-Hoek in the Western Cape, and the mining of coal began in the 1880s, as a result of the discovery of the Kimberley diamond resources and the expansion of the gold mining sector. According to Mathu and Canon et al. (2013), coal mining has been the oldest mining enterprise in South Africa and is an essential commodity dating back to the 19th century. Its role emerged as a primary source of energy in 1923 and has shaped the economic sector and society to succeed. The coal mines needed the energy to transport heavy machinery and labour in and coal out to the ports (Groundwork Report, 2016), where that coal played a supportive role as an energy provider. It contributed to the large-scale energy supply to the south Africans and help bring change to South Africa.

Authors such as Hartnady (2010) state that there has been a significant drop in coal reserves, with an explanation that South Africa's coal reserves have been significantly reduced since the year 2003, and further explain that the research executed by scientists proves that South Africa is left with 15 billion tonnes of coal. In coal mining areas there are 73 collieries distributed, with a majority (61) found in the Mpumalanga coalfields (Mathu et al., 2013).

2.4 Social Impacts of coal mining

Coal mining is essential in the provision of electricity; however, this comes with a risk to the surrounding communities. In South Africa, coal mining has disturbed a lot of social factors where communities had to relocate or be relocated to make way for the mining to occur.? It is important to understand how coal mining companies have influenced societies and it is a huge concern. The livelihoods have changed in some communities that experience community division and alcohol abuse. The mining industry in South Africa can put much pressure on its employees, including working under hazardous conditions and heavy workloads; most communities resort to substance abuse as a coping mechanism (Burnhams et al., 2014).

According to Hill (2008) in the last decade, it has been said that there has been an increase in different perspectives on mining's effects on society's social-cultural issues. When a new number of workers arrives from one place to another, they bring different changes to local communities including cultural change or influence resulting in socio-cultural influences (Hill, p10,2008). Additionally, the rise in the number of new individuals from other countries usually introduces different lifestyles and behavioural patterns, which frequently cause resentment in the surrounding community (Chan, 2004). As a result, tensions may arise between incoming

workers and South African locals as it is a developing country still lacking financial stability due to its historical background (where the apartheid system and sanctions from other countries hindered south Africa's development).

In areas such as Zimbabwe, Botswana and Mozambique coal mining has occurred altered the livelihoods of local communities and negatively transformed their communities. As most of these individuals are removed from their land to make way for mining to occur. It is a hard process to be relocated because this means an individual is starting a new life in a new area with new neighbours if there are any. Poneet et al. (2007) emphasize that it is a big concern to examine how coal mining influences the three pillars of sustainability: economic, social, and environmental. Coal mining in South Africa has been the focal point of domestic energy, accompanied by its adverse impacts on humans, non-human animals, and the environment (Poneet al, 2007). Such impacts include the loss of how useful an environment can be as it does not support the daily needs of the local communities. The environment is of no use for local communities for agricultural practices due to land contamination with acid from chemicals used in coal mine blasting. Most humans have been seen to have respiratory problems through the dust and smog coming from coal mining. Sensitive animals to the environment, such as elephants, have a difficult task when coal blasting occurs due to vibrations of the surroundings, a decrease in their habitat due to land hectares being cleared for expropriation, with a possibility for mining.

Mining companies seem to misunderstand the responsibility they must improve local communities' socio-economic conditions. Mwalyosi, (2014) argues to bear that responsibility because they pay taxes to the government, thus they believe the government must assume responsibility and be accountable for addressing socio-economic difficulties and developing such regions (Mwalyosi, 2004). It may be argued that improving social services in mining towns is a non-negotiable requirement for sustainable mining or at least mitigation of negative effects. Because to maintain a better social service to the communities, social issues should be adhered to and put first before the benefits that may come with coal mining.

2.4.1 Effect on community and livelihoods

The community's livelihoods influence what is happening on the ground; these are the individuals who form part of the commercial success and progress of any mining development. However, unfortunately, the communities are the most vulnerable to any effects that the proposed development may impose. Coal mining has claimed community members' lives and

people have passed away due to respiratory failure. Mining has shaped the living conditions of the local communities. It is essential to understand that the effect of coal mining shapes the lives of future generations and can lead it either to success or failure.

To fully understand the effects of coal mining on communities there's a need to understand the relationship that exists between local communities and mining companies. The relationship that exists between the mining companies and the local communities is important because it will determine the degree of the success of the mining project or its failure. Most communities do not have a good relationship with mining companies due to different reasons. Some include demands that cannot be met by the mining companies, or the service delivered by mining companies is not adequate.

It is important to understand the effects of coal mining on livelihoods, according to Mishra, (2009) normally a livelihood is known as a way of having a living and includes assets, activities and capabilities required for a way of living (Mishra, 2009). Economic growth is fostered by Mineral resources, including creating employment opportunities but may also enforce negative effects on the local community's livelihoods (Hota and Behera, 2015). The central basin's neighbouring communities' quality of life and means of subsistence are said to have been significantly impacted by coal mining in South Africa. (ActionAid, 2014; CER, 2016b; Benchmarks Foundation, 2014). Mining usually occurs in rural areas where marginal communities reside. The lives and quality of life of the residents in these places have been significantly impacted by new mining developments, resulting in new poverty.

There are studies conducted in different areas showing the effects of coal mining on livelihoods (Mishra, 2009). The first example is a study conducted abroad on the local communities in the Ib valley coalfield in Orissa. It revealed that, although the economy and standard of living of local communities had risen considerably with the advent of coal mines, this benefit was at the cost of their environment (Mishra, 2009). The study by Mishra (2009) showed that people are “displaced from their land and lose their homes and agricultural-and forest-based livelihoods; the natural environment is degraded, and there is air and water pollution, and an influx of skilled labour migrants, creating tensions between people and outsiders” (Mishra, p117 2009). The second example is a study conducted in the Ib valley by Hota and Behera (2015). The study assessed the “cost of coal mining on agriculture and human health in western Odisha and found the cost incurred by the local communities. Particularly due to loss of wage income and agricultural production. Apart from health, one of the most significant impacts of coal mining

on human well-being appears to be related to livestock and crop production” (Hota and Behera, p685 2015). This is to demonstrate that the effects of coal mining are not restricted to physical health, but also cover a wide range of consequences. The third example is a study that was conducted in Ghana which shows the effects of mining on agriculture. Small-scale mining activities in Ghana damage large amounts of forest, exposing fertile soils to erosion and other forms of degradation, according to a research study by Hilson (2002). Farmers eventually lose their farmlands to mining activities, which can hinder agricultural progress in the long run (Hilson, 2002).

It is critical to recognize that the effects of coal mining on communities have a negative impact on their livelihoods due to limitations in day-to-day activities for community members to survive. The environment experiences significant changes through coal mining and processing, which can significantly affect the availability and quality of natural resources (van der Burgh, 2012). This, in turn, harms crop and livestock farming due to reduced access to agricultural land, a decline in soil productivity and crop quality, and livestock fertility.

The impact on access to arable land is relevant to the coal mining area of Mpumalanga in South Africa. A study conducted for the Maize Trust through the Bureau for Food and Agricultural Policy (van der Burgh, 2012) indicated that a total of high arable land transformation in the country is 12 % and 13.6% is under prospecting by the mines in Mpumalanga. This study is to show how mining is taking up the land and leaving communities to suffer the consequences. These areas included 326 000 ha of cultivated land taken by current mines and 439 000 ha, which had prospecting placed on them, amounting to 993 301 ha loss of cultivated land (van der Burgh, 2012). The impacts of mining on agriculture and, ultimately, food security can also be indirect. For example, the Benchmarks Foundation study in 2014 (Benchmarks Foundation, 2014) “found that many small farmers along the roads to Kendall and Ogies in the Mpumalanga coal mining region of South Africa have switched from farming and converted their land into truck stops to service the collieries in the area. Farming exports have been affected as farmers have lost European clients because of poor-quality irrigation water on crops” (Benchmarks Foundation, 2014).

The relationship that exists between the mining companies and the local communities is not good. The communities experience hardships through the extraction of this resource. This subsection showed a few studies that were conducted, and it points out how the relationship

between mines and communities is unjust. There is one side that benefits more than the other, living the other side bearing both short- and long-term consequences

2.4.2 Mining affected communities

Before mining can begin, mining companies must obtain government approval. The mining company must survey the environment, learn about the community, and consult with everyone who will be affected by the proposed mining to obtain approval (Chauhan, 2018). Who are the mining-affected communities? Mining-affected communities are areas that have been impacted by a mining project. Most of these communities are in rural areas where mining is fully operational. mining-affected communities in South Africa have a history of disadvantages, and many were forcefully relocated to the mining areas by the apartheid government. The mining-affected communities show plenty of negative effects. According to Chauhan, (2018) a mining-affected community may encounter several issues. The following challenges are listed: The mine may take grazing land; water in rivers and boreholes may become contaminated; wildlife and fish may be poisoned if the water is contaminated; dust and smoke from the mine may pollute the air, and people or animals may be in risk of falling into open pits and shafts in the ground (Chuhan-Pole et al, 2017).

Different organizations have stepped in to ensure that the voices of mining-affected communities are heard and considered. The following are some of the organizations that help mining-affected communities: Mining Affected Communities United in Action (MACUA) is a non-governmental, community-based organization that was founded in response to the need to protect the integrity and interests of those affected by mining. The Global Environmental Trust (GET) is a non-profit organization dedicated to preventing and correcting human actions that degrade, or hurt conserved areas, sensitive and/or significant ecosystems, and contribute to the impoverishment rather than the upliftment of affected communities. Mfolozi Community Environmental Justice Organization (MCEJO) is a community-based organization based in one of the mining-affected communities in KwaZulu- Natal's province. MCEJO ensures that the community's values and perspectives are respected and that laws are applied effectively when assisting the community (SaveOurImfolozi, 2018).

There are different areas where communities have been affected by mining projects all around the globe for example. In Tanzania, there is Taita Taveta County where mining is a huge economic activity. The county of Taita Taveta is rich in industrial minerals and gemstones. Mining has affected the community in different ways. Mining has changed the socio-cultural

dynamics of the Taita Taveta community whereby labour migration has been introduced into the community (Wetzlmaier, 2012). Mining has also changed community dynamics by relocating residents from one location to another to allow mining to take place. Due to mining, there has been an environmental shift in Taita Taveta, which seems to have an impact on agriculture.

Ghana is another country that has high levels of mining which ultimately impacts the surrounding communities. An example is a community in Obuasi where the mining has led to the degradation of the land within this community and resulting in the loss of food and pollution that has affected the water in the area of Obuasi (Aawaar, 2006). In South Africa, there have been different cases such as the one in Xolobeni. A community who have been living in a mining environment for years and had their voices heard through an organization known as the Madiba crisis committee Where for nearly 20 years, a community has fought to prevent an Australian mining business from destroying their ancestral land to extract mineral sands. This action resulted in the death of an environmental activist. This demonstrates that most mining-affected communities suffer negative consequences, which are sometimes overlooked, which is why some organizations dedicate themselves to assisting those who have no voice.

2.5 Environmental impacts

Coal mining is an activity that brings much revenue to South Africa; however, this activity comes with different damaging environmental impacts. Some of these impacts are experienced after mine closure leaving the poor to suffer long-term effects. In this subsection, the focus will be on different environmental impacts that exist from coal mining and how these impacts can be mitigated.

Coal is a strategic asset for South Africa's economy, but also it is a concern due to the significant resource constraints that may limit the extent to which this resource is used (SACRM,2011). At first, there was little environmental degradation related to mining activities (Bell et al.,2001). However, according to Younger (2004) “when the coal trade took its toll to dominate regional economies in mining districts, there was an emergence of negative impacts that came to be accepted as a necessary by-product of coal-based wealth” (Younger, 2004 p170). Processing and coal mining was noted to have a severe influence on the surrounding environment, livelihoods, and human health, according to a growing body of information (Younger, 2004). There are different impacts of coal mining on the environment. These impacts include the degradation of land and deforestation where there is a removal of trees to make way for the prospecting process to occur, which may later lead to mining. An imbalance in the ecosystem, air quality disruption and water contamination are to be explained below.

There is a strategic system that is used to show how coal influences environmental issues “a coal energy system predicts coal mining, preparation/ processing, and energy generation showing environmental issues occurring at every stage of the process, referred to as its' chain of custody” (Zhengfu et at., 2010 CER, 2016). Such operations make a notable impact on the environment (bell et al., 2001), including land alteration (appearance of tension cracks at the surface) with spontaneous deterioration and combustion of the air quality to the surrounding air, water, and soil. In this section, the focus will be on the environmental impacts imposed by coal mining. Starting with Land disturbance, Water consumption, water quality, Ecosystems and health effects, air quality and mining.

2.5.1 Land disturbance

Coal mining is an essential driver in land alteration where coal mining methods and economical coal methods are applied (Lechner et al., 2016). The clearest indicator of land disturbance is land occupation. Mining, particularly open cast mining, takes a sizeable amount of land before

the start, during the project and through the commodity's life cycle until mine closure. This leaves open pits that show no rehabilitation measures. There is direct land disturbance resulting from coal mining which is referred to as land disturbance. This is mostly associated with underground mining; the underground is lowered because digging and mining for coal occur. The land is weakened below and destabilizes the topsoil, followed by collapse. Zhengfu et al (2010) mention that the fragmentation of landscapes and land resource destruction in China is mainly caused by underground coal mining. For example, in Kwazulu-Natal province different mining activities are occurring and some have shown no sign of rehabilitation. In general, KwaZulu-Natal coals are characterised by thin, high-quality seams. The coal in the eastern areas of the province is significantly newer and consists of thick coal zones. What used to be open land is now covered in pits (Lechner et al., 2016).

Land disruptions can also be indirect and extend far beyond the mining site. Soils can be degraded off-site due to the dispersion of contaminated water and dust from the operations and waste dumps. Deforestation and land occupation occur because of waste disposal in the form of overburden, excavations and erection of support and processing infrastructure (Bell et al., 2001). “By nature, mining activities produce large volumes of waste such amount is dependent on the type of mineral extracted and the size of the mine”. Waste dumping during the mining stage has an impact on the area surrounding the mining areas, whose proneness to surface erosion can occasionally increase the amount of silt that enters surface waters. (Mangena and Brent, 2006, p. 1071–1074) According to Sonter et al. (2014), mining operations may have an indirect impact on nearby land users. Degraded areas may be able to support fewer land uses, such as crop production, says limptlaw et al. (2005). Reduced crop yield, plant death, surface fracturing, drainage system failure, soil loss, and building damage are all effects of land-use change brought on by mining activities.

This shows how adverse the land impacts of coal mining are stretched, it is important to understand that while there are good intentions of uplifting the economy through coal mining the environment takes all the pressure that occurs through the process of coal mining. And it affects both biotic and abiotic structures. According to Zhengfu et al, (2010) the impact on agriculture is also of huge concern when looking at land disturbances, the removal of topsoil and disturbing the survival of the soil nutrients play a huge role in affecting the natural order of living (Zhengfu et al,2010).

2.5.2 Water consumption

Water is a scarce natural resource in South Africa which is the 30th driest globally, and lacks sufficient natural lakes, resulting in Dams supplying the water to communities (De Klerk, 2016). Coal mining in South Africa has the most severe environmental impact on water consumption from coal mining (McCarthy and Pretorius, 2009). Water is used to wash coal, and this water is mainly extracted within the community water system such as rivers. When these systems are disturbed, it leads to water shortages for the local community, putting a strain on their crops and livestock. Water consumption is essential in the ecosystem as well because living thing needs water to sustain life. When that process is disturbed, effects such as dry land are witnessed, and the vulnerable will bear these consequences, which may contribute to draughts. Coal mining has significantly impacted local water resources through extensive water consumption and pollution as it requires vast amounts of clean water to process (Bester and Vermeulen, 2010).

In the past, water scarcity has been a cause of conflict between the agricultural and mining industry, where coal mining is adding to the already existing water problem (Benchmarks Foundation and Bread for all, 2015). According to the WWF (2011), contemporary planning for coal mining is not considerate of water resources' importance. In South Africa, particularly, the impact on water resources due to coal mining and coal-fired power stations has been worsened by backlogs in awarding water-use licences, prospecting rights and coal mining concerning ecologically sensitive areas (Mangena and Brent, 2006).

Water consumption by mining may differ according to the operations. Low-grade operations include “coal preparation plants that involve simple crushing and screening and use less water, whereas plants involved in dust suppression activities and irrigation of reclaimed land” and deposition of large amounts of low-density slurry consume vast quantities of water (Mangena and Brent, p 1072, 2006). The main uses of water are for dust control, coal preparation (or beneficiation), and underground mining. According to sources, for example, South African coal preparation facilities use half a ton of water for every ton of washed high-grade coal (Mangena and Brent, 2006). Each ton of coal produced in surface mining operations requires about 22.8 litres of water alone for dust management. (Mavis, 2003).

2.5.3 Water quality

The most severe environmental impact of coal mining in South Africa is on water quality (McCarthy and Pretorius, 2009; Reddick, 2006). To facilitate the management of water

resources, South Africa is divided into nine catchment-based Water Management Areas (WMAs), namely: The Inkomati-Usuthu, Limpopo, Vaal, Orange, Olifants, Pongola - Mtamvuna, Mzimvubu-Tsitsikama, Breede Gouritz and Berg Olifants WMAs (DWA, 2013). The Water Research Commission (WRC) published a Mine Water Atlas to map the unmitigated threat of mining to water resources across South Africa. Based on the findings of the atlas, Surface and groundwater resources in South Africa show significant regional variations and changes in water quality. Wastewater discharges and land-based activities have an impact on this, with mining (acids and salts) reported among the significant impacting sources (WRC, 2017). Of the nine WMAs, coal mining is reported to present significant (medium to high) risks to water quality due to the Karoo coalfields' AMD potential and potentially toxic trace elements within the Limpopo Olifants, Inkomati-Usuthu, Vaal, Pongola -Mtamvuna, and Mzimvubu-Tsitsikama WMAs. Tiwary (2001), states that the sources of water pollution in coal mining areas include:

- Drainage from coal mining sites including AMD and mine water.
- Oil and fuel/workshop effluents
- Sediment runoff from mining sites
- Leaching of pollutants from waste dumps; and
- Sewage from sites.

As previously discussed, mining has a significant impact on land surfaces. Disrupted land surfaces are prone to erosion, which increases sediment loading (Mangena and Brent, 2006). According to (Mangena and Brent, 2006) This is more likely to occur during and shortly after the building phase of a mining operation, tailings heaps, waste dumps, highways, product stockpiles, and other land areas are disturbed. (Mangena and Brent, 2006). Because subsurface water bodies are connected to the mined space through fractured overburden, drainage and mine subsidence have an immediate impact on the water environment. (Zhengfu et al p32, 2010).

The most significant water quality concern relating to coal mining, both locally and globally, is Acid Mine Drainage (AMD), also referred to as Acid Rock Drainage (ARD). AMD is formed from the oxidation of sulphide-bearing minerals, particularly pyrite (FeS_2), that occurs in most coal and certain polymetallic mineral deposits. In terms of generation potential, every coal

mine has a unique potential, (Zhengfu et al., 2010, Akcil and Koldas, 2006). The oxidation of pyrite (FeS_2) resulting from exposure to oxygen, water and naturally occurring bacteria results in the formation of acid, sulphate ions, and soluble metal cations (Vyawahre and Rai, 2016). Tiwary (2001) and McCarthy (2011) describe the generation of AMD from underground and open-cast coal mines as different processes. Underground mining causes the overlying rock to collapse, and when the mining is complete, the voids in the cracked rock that are filled with water are decanted from the lowest aperture. On the other hand, because of its reaction with pyrite (FeS_2) in the unmined coal and host rock, groundwater infiltrates into mines and becomes acidic.

South Africa is in a water war, says Ochieng et al (2010), and coal mining is at its centre. This is due to the high volumes of water consumed by a mining company; for example, if 250 litres of fresh water are required per ton of coal produced, this means that if 9 tons are produced in a week, 2250 litres of fresh water are required. This means that 9000 litres of water are used in a month, which is not recyclable (Ochieng et al., 2010). As a result, there is a lack of safe, clean drinking water in South Africa; this can be exacerbated by the need for coal mining companies to wash the coal after digging it from the ground. Ochieng et al. (2010) mention that one of the primary reasons for water shortages in rural communities is coal mining processes, which are of serious concern since South Africa is a water-scarce country.

There are some neighbouring communities in coal mining areas in South Africa that suffer from water shortages, thus resulting in some poor communities resorting to unsafe drinking water with an accumulation of waterborne diseases (Ochieng et al. 2010). For example, the community in KwaMpukunyoni is facing a problem of water shortages, as the Tendele coal mine has used the Imfolozi river to wash its coal, which is the primary source of water for the Mpukunyoni community. Residents have been relying on rainwater, which is sometimes contaminated. Another case mentioned by Groenewald (2012), makes known that in the Soutpansberg, located in Limpopo; inhabitants have been living in fear of coal mining companies such as “Mc Mining Limited”, “Coal of Africa” who have succeeded in the launch of the Makhando coalmine project. The fear comes into play when the mine uses the divide and rule approach, first diving into the community allocating different resources and creating scenarios where one community will compete with the other for those small resources accounted for by the mine. However, this project had its downfalls, which left the community in distress with the escalated problems from water shortages, contamination of groundwater

and the disturbance in the surrounding ecosystem (Groenewald, 2012). Ochieng et al. (2010) consider the long history of coal mining in South Africa and how South Africa is limited in natural resources. A study conducted in the mining district of Johannesburg in South Africa by Naicker et al. (2003) concluded that the groundwater had high levels of acid due to coal mining and therefore included an elevation of heavy metals, which contaminates the water quality. The right to clean and safe drinking water is now being turned into a commodity due to the cleaning processes involved (Ochieng et al. 2010).

2.6 Eco-system health effects

Coal mining also affects ecological infrastructure, including water resources, and this can result in a decrease in ecosystem services provided by these systems (De Klerk, 2016). According to Zhengfu et al, p 217, (2010) The above-mentioned impacts on land, water, and air pose a significant threat to eco-systems, as, landscape change has an impact on the structure and function of the eco-system through waste dumping, the construction of high shaft towers, large scale surface scarring, and the destruction of land resources, fragmentation, and desertification. (Zhengfu et al., 2010 p217). This may further destroy resources in those areas, including Fresh Water Ecosystem Priority Areas (FEPAs) and Critical Biodiversity Areas (CBAs). As outlined in the CER (2016) report, the 2013 Mining and Biodiversity Guideline describes the impacts of mining on biodiversity as follows (Zhengfu et al., 2010).

- “Changes in demand for, or consumption of, natural resources.
- Introduction of invasive alien species.
- Pollution (including noise and light pollution) and migration of pollutants in air, soils, surface water, groundwater, or the ocean.
- Significant alteration of ecological processes, sometimes irreversibly
- The loss and degradation or conversion of land, marine and other aquatic habitats and associated loss of species (CER Report, 2016)

It is known that Acid Mine Drainage may pose significant impacts on the environment because it poses considerable challenges to agriculture; these include lack of soil nutrients, crop failure, destruction of land resources and water sources in which wildlife and aquatic life strive to survive. In addition, soils that are contaminated by AMD show adverse effects on plant

development and growth. (Simate and Ndlovu, 2014). Andersen et al. p22 (2014) noted that a “tremendous potential for negative impacts on biodiversity is not from individual mines but the cumulative impacts of extensive development in highly prospective regions or diffuse development over large regions”. By combining the size of exploratory activities, the mine sites themselves, and, most crucially, the roads, pipelines, communities, and water supplies that service them, mining has the potential to affect biodiversity regionally. And this has led to a change in the flow of the ecosystem and a decrease in food production for some communities.

2.7 Air quality and mining

Air quality is very important both to living humans and plants if the quality of air is polluted there are devastating impacts which may result in people with respiratory problems losing their lives or having chronic illnesses a range of scholars explain the air quality in association with mining are Karekezi (2002), Naidoo et al (2005), Newell, Du Plessis and Mulvaney (2013)

Coal plays an important role in South Africa, according to Karekezi (2002), South Africa is heavily dependent on coal for various activities making South Africa the user of approximately half the continent's total energy. This shows a high coal usage, and there are different forms of air pollution resulting from the increase in coal mining. These “include, local air pollution, greenhouse gas emissions and land degradation, which results from open cast coal mining” (Karekezi, 2002). One of the challenges that have evolved as a result of coal mining in South Africa is air quality. Du Plessis (2011) mentions that Africa became the first continent which introduced an environmental right in 1981 in the “African Charter of Human and People's rights” (also known as the Banjul Charter) in article 24, which was then incorporated in the African Charter of Human and People's Rights. Many countries have followed in their footsteps to ensure that environmental rights are introduced in their constitutions. Du Plessis (2011) further stipulates that air pollution is a huge issue in Africa and the existing sources of air pollution include coal mining, the burning of tyres and other gaseous activities from industries. Much focus is placed on coal mining areas such as those in Limpopo, Mpumalanga, and Johannesburg. This then threatens the lives of the people who are situated in these spaces. Most of them have been seen to have high rates of asthma associated with the degraded air quality produced by coal mining (Du Plessis (2011)).

Air quality has been a serious issue when it comes to coal mining, China is an example of how the smog from coal mining companies accompanied by factories has contributed to air

pollution. There have been cases where people die due to a lack of oxygen caused by dust and contaminated air quality from coal mining. There were tests conducted in Johannesburg to understand the rapid growth of tuberculosis amongst the mine workers, Naidoo et al. (2005) indicate how the tests were conducted on different mine workers in South Africa to understand the nature and cause of death from mine workers. Studies conducted in Johannesburg by a team of researchers with that limited access to the database proved that several diseases which coal mine workers contracted might have been caused by working in the coal mine. This is not shocking since the report has shown that most of the people working in the mine have shown high levels of lung diseases. Naidoo et al. (2005) mention that such diseases include Tuberculosis (TB), lung cancer and Fibrosis. Such diseases pose a severe problem to inhaling polluted air as these diseases are life-threatening (Naidoo et al., 2005).

Munnik (2010), and Hendryx (2009) postulate how coal mining results in health issues. Munnik (2010) points out that for years in South African coal mines, workers have been ill-treated, and paid low wages and, some suffered from what is known as "coal workers' pneumoconiosis", known as (black lung disease), the pneumoconiosis resulted in the death of many coal mine workers since there was no health system adequately integrated with their work progress. In addition, loss of hearing has proved to be shared amongst other former mine workers. According to Munnik (2010), a human rights approach is used by researchers to analyse this ill-treatment of human beings who do not have a voice or whose right to a clean environment; the right to access clean and safe drinking water and clean air quality are not considered (Munnik, 2010). The section that follows will look at human rights legislation and how it is applied in South Africa to protect its citizens from human rights violations caused by coal mining.

2.8 South African Legislation on coal mining

It is imperative to understand the law which embodies coal mining. According to Lloyd, (2002) Different legal approaches are allowed in coal mining. The law is there to protect the environment and the humans that occupy the environment and the non-human animals that are part of the environment. Therefore, it is crucial to ensure that environmental law is considered in coal mining as it is also used to regulate observable mining in South Africa. This section includes different aspects of tools used to measure the social impacts of coal mining. How are the tools used to measure the social impacts of coal mining affecting the local communities in different spaces in South Africa? The South African history of black ownership of coal

industries has been an issue for centuries, with the apartheid system resulting in marginalization and systematically inhibiting black ownership of production using exclusionary policies resulting from the colonial rule. Post-1994, the government regulated all the apartheid policies that excluded black ownership, thus creating new policies, bills, and legislature to redress the past injustices (Lloyd,2002).

According to Sadler, (1996), It is challenging to understand social impacts experienced by different communities with a narrow mind as people are affected differently in different places. That is why it is essential to look at the tools used to detect social impacts when a coal mining project occurs. Different tools are used to measure social impacts when there is a project implemented (Sadler, 1996). One of the ways is Environmental Impact Assessment (EIA); this is a tool used to “evaluate and identify potential social and economic impacts of a particular proposed development action to facilitate sound environmental management and informed decision making”. It can be a preliminary planning model since it is used before initiating a project or development. Sadler (1996) states that no “one size fits all tool that can measure and quantify impacts imposed by any project for development”. But the selection and use of suitable EIA tools involve professional judgment to match methodologies with distinct features of biophysical environments, social, and economic. The main challenge is to find methods that are most suitable for the purpose which can be easily understood by the intended audience and be accepted (Sadler, 1996).

Another essential tool that needs to be part of a particular project's implementation and planning phase is a Social Impact Assessment (SIA). There are different ways to understand this tool; moreover, it is important to note that there is an agreement that most of the issues affecting the people are either direct or indirect based on a policy or project and are relevant to an SIA (Burgde et al., 1995) According to Valnclay (2003, p.6): “Social Impact Assessment includes the process of analyzing, monitoring, and managing the intended social consequences, both positive and negative, of planned interventions) policies, programs, plans, projects) and any social change processes invoked by those interventions”. This is very important to understand because. Social Impact Assessment show any potential impacts that can result from a mining project. This tool is relevant to the study because it gives precise potential social impacts on the surrounding communities (Valnclay, 2003). Furthermore, it also gives the developers and the community what impacts to expect and how to prepare mitigation measures. Because in most communities' social impacts are badly experienced in the closure of the mine.

Burger et al (1995) mention that this is where the community has been divided, and the only source of their income is no longer a provider. They must live a life without the mine. Excessive behaviours are experienced where there is a high use of alcohol abuse and domestic violence. Here are the following aspects of Social Impact Assessment: a project will involve attentiveness to change in one or more (Burdge et al, 1995).

- “People's way of life, how they work, live and how they interact with one another from a day-to-day basis.
- Their environment, the use of water and the air quality, and the level of noise and dust they are exposed to. Their fears and safety about their security, proper sanitation, access to and control over resources
- Their community. Its stability, services, and facility also its cohesion
- Their culture shared beliefs, values, and customs” (Burdge et al. 1995, Cox and Miers 1995, Petts 1999 Vol1 p 304)

The tools listed above are used to ensure that communities and the environment are well protected from any potential dangers that may arise from a mining project. It is critical to note that the tools mentioned have been used during and after South Africa's apartheid era.

It is important to note that the apartheid era played a significant role in shaping the mining industry in South Africa. Leonardo (2018) mentions that during the apartheid era, the mining companies would operate freely without any restrictions. Mining industries would be given enormous power to operate without being held accountable for environmental destruction. Mining companies have strategically taken advantage of weak local governments in poor communities to influence development. The apartheid placed South Africa on another factor: mining companies influence government decisions and politics (Leonard, 2018).

According to Leonard (2018), the South African constitution is robust on paper, but it lacks compatibility when it is implemented. Since the democratic communities have voiced their opinions and disapproval of mining in their areas, those who have agreed are still facing problems up to date. Stakeholder engagement between the mining authorities and civil society has not been transparent. However, in the last decade, there has been a strong legislative agenda that centralises the power of the traditional leader. It has resulted in legislative instruments such as The Communal Land Rights Act of 2004 (CLARA), the Traditional Leadership and Governance Framework Act Amendment Act, the Traditional and Khoi-san Leadership and the Land Tenure Bill. These legislative instruments displayed a lack of public participation

which led to the striking down of CLARA by the constitutional court (Ubink et al, 2021). Leonardo (2018) mentions that the south African post-apartheid transitions have influenced corporate power in mining companies. This indicates that the government protects resources more than human life. All over South Africa, there are cases of intimidation of the local communities, and in most cases, this results in loss of life and a change in livelihood.

It seems that the government has made initiatives to bring back and restore the past imbalance of uneven development and apartheid spatial inequalities; however, these initiatives have not proved helpful in the implementation phase. This, however, results in a long gap that already exists amongst the poor. It also brings an imbalance of power, resulting in most of the policies being implemented not progressing effectively. Also, it shows that there are no shortcuts to justice and profound changes need to occur for success to be visible. The changes in power distribution and policy amendment are relevant to this thesis as this shows that different power dimensions are visible. When power is not distributed evenly, it tends to cause conflict and distress to vulnerable individuals.

The government of South Africa is the steward of natural resources in the country. “Chapter 2 of the bill of rights in the constitution of the Republic of South Africa, 1996, section 24 (b) (iii), has a provision that Everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development” (Diale, 2014).

Fundamentally, a legislative framework has been endorsed by the government to regulate mining company’s responsibilities and its operations. In a traditional sense, mining activities are perceived as economic avenues by local communities for improving the local and national economy. The available workforce, of the community, plays an essential role in ensuring that the country prospers economically. However, in the last four decades. Mining activities have come to be seen as answers to the serious development concerns faced by local communities. (Malinganya, 2013). “The change in view has exerted pressure on mining companies and the government to re-think the role of mining in the country, considering the complexities of development challenges and the interest of capital owners” (KPMG, p7 2014).

There is a responsibility which includes the improvement of socio-economic conditions of local communities in the mine's proximity (Saul and Bond, 2014). nevertheless, there is

literature that indicates that “stakeholder engagement has not been a priority for most mining companies” (Saul and Bond, 2014). As a result, the local communities have no access to information about any future involvement in the mining industry and they are excluded from any other benefits from the mines. (Kabemba, 2014).

It is critical to note that the Mineral Petroleum Resource Development Act regulates South African mining legislation. Cawood (2004), South Africa's mining law is regulated by the “Mineral Petroleum Resource Development Act (MPRDA) of 28, of 2002”. This is an important piece of legislature that deals with prospecting, acquisition, exploration, and mining. The MPRDA came into effect on the 1st of May 2004, and this piece of legislature is still used up to this point. The amendment of the MPRDA has not been finalized due to a "lack of consultation with communities at the provincial level. The Minerals and Petroleum Resources Development Act guides how the” prospecting, quarrying and production of minerals in South Africa should occur” (Benchmarks Foundation and Bread for All, 2015). “The legislation is in support for public participation promotes transformation within the minerals and mining industry, promotes equitable access to minerals, and focuses on developing black ownership of mines” (Benchmarks Foundation and Bread for All, 2015; Diale, 2014). This has led to, contestation over mining where there is a lack of community engagement for example the case study of the Tendele coal mine in Mpukunyoni demonstrates this issue. Another example is at eXolobeni rare minerals were discovered on the coast of Xolobeni in 2002. Mineral Sand Resources (MSR), a subsidiary of Mineral Commodities Ltd (MRC) in Australia, has sought to mine them. The mine would recover nine million tons of ilmenite, titanium-iron oxide, rutile, zircon, and leucoxene over the course of 22 years. Although the Department of Minerals and Energy granted mining rights in 2008, the decision was overturned after legal action by the Amadiba Crisis Committee and the Legal Resources Centre (LRC). This shows the importance of ensuring that the voice of the community is heard and taken into consideration at all levels of a mining project.

Another relevant piece of legislature that plays a crucial role in mine policies is the mining charter (Cawood, 2004). This document is used to regulate and ensure that the goals set by the mining companies are reached and failure to comply with such goals can be regarded as a breach of the MPRDA. As mentioned in the MPRDA, if there is a breach or non-compliance of an act, the minister may revoke the mining right (Cawood, 2004). The mining charter intends to ensure that the community is benefiting adequately from the mining activities and

investments. The mining charter aims to recognize and improve the Black Economic Empowerment (BEE) transactions. Thus, increasing the black shareholding from 26% to 30% is evident from the current mining charter, which was dismissed from implementation due to community engagement (Cawood, 2004). This shows how black empowerment is empowered in the south African mining law; however, this does not reflect what is happening on the ground level.

2.9 Political Ecology Approach

The definition of political ecology is a topic of debate between different scholars at specific times. Political ecology is challenging because the theory takes from different disciplines. These include anthropology, geography, sociology, biology, and ecology. Consequently, different definitions of political ecology have been provided by different theorists. The Political Ecology definition that is most cited is that of Blaikie and Brookfield p36 (1987). They define political ecology as the integration of environmental issues with a broadly defined political economy. This concept considers the ever-shifting conflict between and within society over land-based resources, evaluating this conflict within and between social classes and groupings. (Neumann, 2005 and Biersack, 2006). And to understand and assess political ecology, certain roots would form a contemporary understanding of political ecology that need to be analysed. Some scholars have focused on its contribution to green environmental movements and open analysis and confrontation with the capitalist system (Atkinson, p13-50 1991 and Forsyth, 2003). Thus, political ecology belongs to the critical radical theories that aim to instigate action and replace unjust world systems with justice (Kitchen and Tate, 2000). Robbins (2004) introduces Political ecology as: “a field that seeks to unravel the political forces at work in environmental access, management, and transformation political ecology is a broad approach that examines a diverse range of topics in geography concerning human-environment relationships”.

In the 1960 political ecology emerged as an analytic framework. Although the idea of analysing how human organization impacts, social forms, and the interaction with human-environment the term political ecology was coined by Wolf (1972) The anthropologist Eric Wolf is generally credited for formalizing the theory when he first coined the term political ecology in 1972, it was later used in 1975 by Bartrand de Jouvenel, due to different disciplines within the field and its complexity. It is said that “there was no piece that marked the emergence of political ecology as a theory as with other social philosophies such as Marxism and functionalism (Bryant,

1997). (Walker, 2005; Biersack, 2006). Even though some of the work during this early period did not use the term political ecology, the analysis adapted to political ecology's philosophy and epistemology" (Blaikie, 2008). Therefore, it is important to recognize different disciplines that further elaborate on political ecology. Ecological anthropology and cultural ecology developed as early as the 1940s (Boons, 2009). These theorists sought to explain the relationship between nature and society". Biersack (2006), mentions that the explanation of culture is adjusted through human order, which reduces culture to nature. The understanding of society by these theorists is organized between two levels: cultural and biotic (Boons, 2009). What is the importance of political ecology? What gives it more value than other theories in understanding environmental issues?

During the year 1980, political ecology was made famous by various authors, including Blaikie and Brookfield (1987), Bassett (1988), Black (1990), Bryant (1992), Stott and Neumann (1992) Moore (1993), Muldavin (1996), Escobar (1996), Bryant and Bailey (1997), Sullivan (2000), Walker (2005), Forsyth (2008), King (2010), show how the political ecology term is used in their work. As a result, the political ecology approach has proved to be important amongst scholars that interrogate the link between human society and the natural- environment and mining. According to Forsyth (2003) "political ecology has increasingly been taken up by social scientists and less by ecologists and other natural scientists. It is essential to understand that political ecology has increasingly been adopted as a theoretical framework for analysing human-environmental relations". Different factors account for why political ecology occurred at the time that it did. To a broader extent, political ecology emerged because of the problems of existing scholarship that utilized positivist theories of adaptation, organic analogies and behaviouralists to analyse local-scale "human-environment interactions (Vayda and Walters, 1999; Biersack, 2006).

Bryant (1997) argues that contemporary environmental work wrongly assumes "that human-environment interaction such as coal mining can be understood in terms of selected social concerns without the need to grasp the nettle of political and economic interest and conflicts that are typically associated with those concerns" (Bryant 1997 p 6). The political ecology approach assists us to untangle those complex issues. Robbins (2004 p 12) mentions that political ecology is a crucial tool because it can critique how the environment is viewed, and favoured by corporates, international authorities, and the state. Robbins (2004) further argues

that political ecology displays negative aspects of environmental policies, importantly from local, vulnerable populations and marginal groups (Robbins, 2004 p 12).

Political ecology “theories were developed to address the impact of the rapid expansion of capitalism, neo-colonialism, and decolonization on the environment and the resultant environmental degradation in the 1960s and 1970s (Vayda and Walters, 1999; Walker, 2005 p 75). Explanations of this environmental degradation were mainly analysed through orthodox natural sciences such as biology. This dualistic way of looking at nature and society separately resulted in scientists focusing more on the environment. This people-environment binary humanity was assumed to be separate from nature, hence the assumption that degradation was caused by the resource users acting on the environment”. The limited world view about political ecology, according to Braun (2006 p 127) states that the “human utilization of natural resources showed the end of nature because nature could only be true nature without the interference of people. It is important to analyse coal mining through a political ecology lens. Natural scientists assumed that environmental change and problems are politically neutral. This position is unchallenged by today's dominant social ecology theories, namely ecological anthropology, and cultural ecology (Castree, 2003; Walker, 2005).

Political ecology analyses how power and economics render resources, landscapes, and marginalized people in instrumental terms (Robbins, 2004, Martínez-Alier, 2015) The political ecology approach shows the terms of trade and existing physical shortfalls in international trade in the Global South, and the associated ecological distribution conflicts. Martínez-Alier, (2002) illustrates that a significant contributor to political ecology is the analysis of ecological distribution conflicts. According to Robbins (2004), ecological distribution conflicts refer to hardships that appear from structural asymmetries in distributing the burdens of access to natural resources, the population, or the sacrifices made to extract those resources. Most of these conflicts are grounded in unequal distribution of power and income, social class and gender or social inequalities of ethnicity (Robbins,2004).

Such ecological distribution conflicts are not only limited to economic valuations (from extraction to transportation, consumption to waste disposal, where different companies or NGOs have stakes in different stages of the chain), but also there are different valuation languages these may include environmental, ecosystem, territorial and human rights, and environmental justice. These languages are then revealed through different forms. Some may be through petitions or court cases (as visible in chapter 4 of this research), and others may

reveal it through riots or protests. Bebbington (2015) explains that the “ecological distribution conflicts caused by the extraction and consumption of coal across different scales (bi-local, bi-national, and global) have shown that the political ecology of coal is a macroscale project of resource extraction and trade” (Bebbington, p94 2015).

2.10 Environmental conflict and mining through political ecology lens

It is important to understand environmental conflict through political ecology because conflict is at the centre of many political ecology studies. Political ecology perspectives on conflicts are primarily drawn from Marxist, post-colonial, and feminist conflict theories, which mention that conflict results from different social structures (Bryant and Bailey, 1997). The importance of understanding environmental conflict through political ecology is to give an overview of how coal mining is shaped and influenced by political ecology.

Environmental conflict is defined as a “result from degradation caused by human activity or mismanagement rather than the finite nature of the resources exploited” (Dokken and Graeger, 1990, p113). Notably, this definition will include renewable resources such as agricultural land, forests, water, and fishing stocks, all of which depend on sustainable usage to ensure their continuation. However, the functional role of the ecological factors as a cause of conflict has been relatively neglected, with much of the academic focus being on the environment as an economic resource (WBGU, 2007).

Environmental conflict is broadly understood as a social conflict that relates to the environment. Robbins (2004: 173) “identifies two significant facets of the environmental conflict thesis”. First, which “increasing scarcities produced through resource enclosure or appropriation by state authorities, private firms. social elites accelerate conflict between groups (gender, class, or ethnicity) increasing scarcities (Scarcity is the phenomenon where, when a product or service is limited in availability or perceived as being limited, it becomes more attractive.) through resource enclosure or appropriation by state authorities, private firms, or social elite to accelerate conflict between groups (gender, class, or ethnicity). The first facet consists of environmental problems being politicized when local groups have secured control of collective resources at the expense of others through leveraged management interventions by private firms or state agents. The second facet consists of the “ecologization” of conflicts that pre-existed due to resource development policy or conservation changes. The argument is rooted in three lessons about social ecology from feminist theory, property research and critical

development studies. First, environmental problems become “politicized” when local groups secure control of collective resources at the expense of others. Thus, environmental problems are not first felt at the international level but provide challenges to communities within the nation-state”.

There are places where mining conflicts have been observed. One would be in Limpopo Province, South Africa. Mining company-community-government conflict has been evident between Coal of Africa Limited (CoAL) and a local community (Prinsloo, 2014). CoAL is an Australian company that explores and develops thermal and coking coal mining projects. Two of its mines, the Vele and Makhado projects, have received strong opposition from community members, NGOs, and government departments. The opposition is about inadequate consultation, and the environmental and human rights impact the mines come with. The concerns resulting in opposition to the Vele mine were mainly to do with the potential of the mine to consume high amounts of water; groundwater pollution, dust pollution from mining transport; and destruction of agricultural and tourism activities and jobs. CoAL unlawfully commenced several activities listed under the NEMA, including the unlawful use of water without the required authorizations, and was fined R9 million and given a directive by DWS to cease all unlawful water use (Benchmarks Foundation and Bread for All, 2015). In 2013, mining was stopped temporarily due to producing low-grade coal, although CoAL had still planned to increase the mining area from 102 ha to 502 ha (Benchmarks Foundation and Bread for All, 2015). Although not operational, the Makhado Mine has also received massive opposition from the local Mudimeli community (located just 250 metres from the mine site), local white farmers and eco-tourism businesses. The opposition called for alternative development opportunities and was against mine development. They were raising concerns about the inadequate consultation by CoAL and the potential impacts that the mine has on the water and health of the community. Regardless of the ongoing opposition, the mining right was granted by the DMR in May 2015. An appeal was ineffectively filed by the Mudimeli community, the Mudimeli Royal council, and the Vhembe Mineral Resources Stakeholders.

2.11 Environmental discourse and subjectivity

To understand the environmental discourse and subjectivity, it is essential that we have a basic understanding of what is a discourse. According to Dryzerk (p34, 1997), "A discourse is a shared way of apprehending the world that is embedded in a language enables those who subscribe to it to interpret bits of information and put them together into coherent stories and accounts". Each discourse is founded on assumptions, judgments, and assertions, which serve as the foundation for analysis, disagreements, agreements, and conflicts (Dryzerk, 1997). In simple terms, discourse is a shared way of how people understand the world around them through the language they speak.

According to Stibbe (2009 p,22), discourses are standardized methods in which certain social groups use words, images, and other types of representation. In simple terms, a discourse is a way in which individuals talk about something. Stibbe (2015) elaborates that a discourse is a form of communication between people who are engaged in a serious conversation about a specific topic. Hassan, (2015) states that the term discourse refers to a systematic way of thinking that may be communicated in words. Discourses are thought to influence our opinions on everything. As a result, environmental discourse emerges because environmental issues have a social component. An environmental discourse is an added element to a "discourse" understanding how people interact with the environment and looking at the influences that these interactions possess (Dryzerk, 1997). For example, there will be interactions between different stakeholders with differing interests, viewpoints, and understandings of how to handle these worldwide concerns, as there are multiple stakeholders in conservation issues. As a result, witnessing and comprehending environmental discourse can help us better understand the complexity of conservation concerns, as humans construct a complicated system of beliefs.

There are two ways in which environmental discourse is explained. The first part is described in a traditional sense using spoken or textual interactions regarding the environment, which best describes an environmental discourse (Dryzek,1997). The second meaning is based on how different worldviews come into play and explain the interaction that people have about the environment. The term subjectivity refers to how people have shaped their judgments influenced by their emotions and feelings. According to Brown (1998), "subjectivity refers to experiences that are mental and cannot be measured. These include how one feels about a particular subject and how it influences their emotional well-being". Robbins (p216, 2012) mentions that the topic of the "environmental subject looks at how people's behaviour and

livelihoods within ecologies influence their identities. According to Robbins, p217 (2012) "it is understood how a mine influences people's judgment, including how they feel about the mine, and a change to their livelihoods. This study looks at how the livelihoods and socio-ecological changes of mine adjacent communities have been shaped and influenced by the coal mining activities. Therefore, the concept of environmental discourse and subjectivity is important as it embodies the crucial aspects of this study (Robbins, 2012).

Conclusion

It is important to note how coal mining has shaped the local community. As mentioned above there are different impacts that are associated with coal mining. These impacts play a crucial role in decision-making for the three spheres of governance. A political ecology approach is used in this research to understand how power and politics influence the decisions on the environment and local communities on coal mining. It is important to also understand the impact of environmental discourse and subjectivity. How are people experiencing the reality of living in a mining environment and how does it affect their worldviews?

Historically coal mining has had a huge impact on the environment, there is plenty of documented evidence to support this. Most of these impacts can be primarily associated with the quality of water, physical and chemical land degradation, and air pollution through particulate matter emissions. The published literature also provides substantive evidence that this environmental pollution may and often harms local ecosystems and community health and livelihoods, mainly through crop and livestock farming. AMD from coal mining, land disturbance, air quality contamination and ecosystem alteration results in significant pollution of land and water resources. the contaminated environment is unsuitable for both human and animal consumption; the water's acidity and toxicity disrupt metabolic functions; the land is disturbed leading to adverse health effects and aquatic life's death. Contamination of soils may affect fertility and, in turn, hinder plant growth and crop quality. Dust and gaseous emissions from coal mining and residential coal use can impact human health.

This chapter presented a wide range of literature on coal mining and how it has influenced both the local community's environment and its residents. The literature on political ecology is discussed, and it revealed various forms of power that exist in environments affected by mining. The literature review presented in this chapter uncovered research on the different

effects of coal mining. An understanding of South Africa's mining law was made possible by various mining policies and regulatory information provided in this chapter.

CHAPTER 3:

RESEARCH METHODOLOGY

3.1. Introduction

This chapter details the research Methodology utilised during the study, where a case study approach was adopted, explicitly focusing on community perceptions of mining on KwaMpukunyoni in KwaZulu-Natal. The KwaMpukunyoni site was identified as a suitable location because it involves mining-affected communities and allowed engagement with the objections and questions of the study. The mining project that is currently occurring in the area has been operational for over ten years. There has also been an ongoing contestation between the mine and the local communities, which makes this an ideal study area because it shows real-time problems and how the community adjust to such issues for the intended study. The evaluation of the contestation based on the community's perception of mine operating in Mpukunyoni will be addressed through different tools which I will cover in this methodology. There is a research gap within the study site, as there is not enough academic information available on the topic, and a need for new information making it a good study site and area.

A research methodology is imperative when conducting research. A research methodology is a model which manages the way research is conducted within a paradigm and establishes a set of rules and standards which structure the foundation of the research inquiry (Wahyuni, 2012; Gelo et al., 2008). Moreover, the research methodology embodies beliefs that further inform the approach, observations, and researcher's theory. Research methodologies are underpinned by philosophies such as positivism, constructivism, or as in the case of this study, the pragmatism that is the philosophical roots of mixed methodology research (Denscombe, 2008; Migiro and Magangi, 2011; Symonds and Gorard, 2010).

This methodology will outline that the study adopts a case study design, with a pragmatist philosophy that underpins its descriptive research orientation. According to Lans and Voordt, (2002) the purpose of descriptive research is to describe the relationship between variables, characteristics of a phenomenon and the relationships between phenomena in a correct setting as possible. There are different ways of describing a phenomenon, which is why this methodology employs a qualitative data collection method (Lans and Van Der Voordt 2002). Using an interpretivist approach to this descriptive research as the foundation of research

produces crucial outcomes, allowing the researcher to synthesise various philosophies (Kumar, 2011). The study area of this research is centred on the community's perceptions and evaluation of issues they face with a coal mining company known as Tendele.

This study was based on a descriptive analysis of the Mpukunyoni community's perception of the Tendele coal mine collection and how the mine's operation affects the community. The main reason for using descriptive analysis is to gather data collected during fieldwork and analyse the data by looking at the associations or patterns that arose during the data collection. For this study, the emphasis was on community perspectives and local levels of environmental degradation, attitudes and knowledge towards concepts such as conservation, environmental degradation, and air pollution. "Descriptive research is about describing how reality is. In this respect, descriptive research differs from prescriptive research which is primarily concerned with how reality should be" (Lans and Van Der Voordt 2002). With descriptive research in its purest form, explanation and evaluation are provided to other disciplines or the reader. This kind of research is prevalent in geography (description of the earth) and social geography (description of the spatial aspects of social phenomena), which are based mainly on descriptions of reality (Lans and Van Der Voordt 2002). Furthermore, descriptive research allows the researcher to utilise qualitative, research methods to address research findings adequately (Kumar, 2011:10).

It is said that the descriptive approaches stress the complexities of research and assert that a research design cannot be singularly determined by theory as suggested by deductive research, or information is driven as suggested by inductive research (Doyle et al., 2009; Wheeldon, 2010). Creswell et al. (2008) state that social phenomena are often complex and best understood through mixed methodologies. This chapter will discuss research methods. Using a qualitative method for this study (Creswell et al., 2008). This research is encored by a grounded theory which will be explained below.

The first section will provide a research design and approach, and a description of the study area. Furthermore, a description and the outline of the research methodology, data collection tools and techniques used to obtain primary data, including the limitations and challenges the researcher experienced in the study.

3.2. Research Design and Approach

A research design is a normal strategy employed to combine different methodologies and techniques used by the researcher in the field for data collection. A research design establishes a framework of methods and strategies that allows a researcher to scientifically address their stated research questions (Kroll and Neri, 2009). The research design adopted in this study is based on a case study strategy and is considered as an empirical enquiry into a research Phenomenon in the context of real-life experience (Noor, 2008). A case study that was selected is that of a Tendele coal mine in KwaSomkhele looking at community perspectives and perceived local levels of environmental degradation, attitudes, and knowledge towards, environmental degradation, air pollution and water quality. A case study addresses how and why things occur, which allows for the evaluation of contextual realities and differences between intended and actual outcomes (Noor, 2008). These contextual realities are explored using various information sources (Creswell et al., 2007). A case study aims not to examine an entire population or provide input and focus on specific issues and features (Noor, 2008). For example, in the case study of this research, the focus will not be on the whole of Somkhele or the perspectives of the mine officials, but rather it is focused on the perspectives of the people in the five villages adjacent to the mine. The case selected may be groups of individuals (mining-affected communities for this study) or activities, and the associated issue to be investigated (Creswell et al., 2007). There are three specific reasons for taking a case-study approach: for example, the case study of Tendele coal mine and Mpukunyoni.

- when the study seeks to address questions of 'why' and 'how',
- when a researcher cannot manipulate the behaviour of participants within the study, and
- when a researcher seeks to explore conditions within their occurring context. (Baxter and Jack, 2008).

The study followed a descriptive research design since it sought to describe the status of a specific situation faced by the communities within the Mpukunyoni community. Where the Tendele coal mine is in question with its operations is alleged by NGOs such as GET and ActionAid to be non-compliant with the Environmental policies and where there are questions about the operations of the mine and this influence on livelihoods, as well as factor to the contestations from the village members of KwaSomkhele.

A detailed history of the study area was used in this research to indicate how the mine came to be today and how the proximate communities respond to the changes experienced on the ground. I will attempt to show how Individual lives were negatively and positively impacted in KwaMpukunyoni which is a place with a high level of unemployment and poverty (Baxter & Jack, 2008).

The data collection was extracted from primary and secondary sources. In this study, qualitative methods were used to collect primary data, including observations, semi-structured and in-depth interviews, questionnaires, and oral testimonies. The research study was done using questionnaires to guide the research. A multi-strategy approach, also referred to as triangulation of research methods was used in the study. The use of the qualitative research method was anchored by various aspects of reality. Analysis of data incorporated thematic analysis. Thematic analysis is explained as identifying prominent themes. The secondary data sources included maps; however, the mine did not respond to a request for an interview. The data collected also made use of a quantitative approach.

Grounded theory is a qualitative research approach developed by sociologists Glaser & Strauss (Glaser & Strauss, 1967). Grounded theory is described in these terms by them: The theory was created by systematically collecting and analyzing data during the study process (Strauss & Corbin, 1990, p. 12). This approach aims to construct a theory that is grounded in the data. Howitt and Cramer (2011) state that grounded theory involves several techniques that enable researchers to analyse detailed qualitative data effectively. This thesis employed a Grounded theory using a Political Ecology approach to explain the findings in terms of the subjectivity produced in mining-affected communities as a result of their experiences. The researcher went to the field for data collection, interpreter and analysed the data, unlike some researchers who first need a theory to test their hypothesis but, in this study, the researcher went to the field before formulating a theory, and data ground the theory (Howitt and Cramer, 2011)

3.3. Location and description of the study area

According to Klifford (1997), “the Field is a special place inside and outside”, supported by physical movement practices. This concept fits perfectly with the study area as it is a mining environment and looks at the physical activities witnessed by the communities in KwaMpukunyoni. These are characterised by different communities in different geographical areas and scattered stakeholders. In the study area, people have similar values and shared cultures. For example, the institution of chiefs is still relevant in the chiefs that govern the seven villages; this is not limited to those who somehow disagree with the way decisions are taken and put into operation, specifically about the mine. The commercialisation of land comes when the mine uses the land to generate income, and whatever is in the ground is commercialised and no longer belongs to the community. Power is also a common factor at play in KwaSomkhele different types of power are seen in the study area, and there is a power division among the community members; this power is given to certain members of the community who have either been elected by the committee or appointed by induna.

As the literature review shows, unequal power relations and overlaps of personalities and possibly cultures. It was important for the researcher to choose a research approach that will fully expose the dynamics and complexities of the study (Klifford,1997). Somkhele is the largest village out of the five that are researched in the study area. It is a rural place in Mpukunyoni. KwaSomkhele lies in the North of Kwa-Zulu Natal and comprises the seven villages Myeki, Mahujini, Ndandabantu, Isiyembeni, Machibini, Ungengele, and Dubelenkunzi that is also part of the Mpukunyoni Community Area, which consists of 30 villages in total. It is a community characterised by unemployment and illiteracy where many adolescents dropped out of school before they reached grade twelve, putting pressure on the already depleted resources in the area (Klifford, 1997).

The Inkosi and izinduna rule this rural area; Mpukunyoni has the Mkhwanazi as the Inkosi and the Mpukunyoni traditional authority. Somkhele is well-known for its subsistence agricultural practices. The town Somkhele is famously known for its deep-rooted traditional customs and is named after the local icon King Mtubatuba who died in 1930 (Respondent 3, 11/05/2019). Somkhele has 30 Izinduna placed under each village to control and regulate societal issues, concerns, and progress. In Somkhele, a municipality serves under the uMkhanyakude district and as mayor Mr M.V Gumede. (Respondent 3, 11/05/2019). In KwaSomkhele, there are abundant natural resources where coal is the leading and most extracted resource. Somkhele

Figure 3.3.1 shows future & current mining areas, where the mining right is granted at Mtubatuba KwaSomkhele (Srk consulting for Tendele,2018)

The geographical location of the study site is 28.4167 Longitude: 32.1833. latitude. The study site is in KwaSomkhele and is 85 kilometres North-East of Richards Bay in Northern KwaZulu-Natal. This study area encompasses a large amount of land used for agricultural purposes by the communities, it is a rural area with a tared main road, and the rest of the roads are gravel. Somkhele Mine is in northern KwaZulu-Natal at Somkhele Coalfield. The coal-bearing strata are found in the Beaufort Group's lower Emakwezini Formation. The Emakwezini coalfield is located in the Emakwezini formation, which is significant both paleo botanically and economically because the plant-rich in carbonaceous mudstones and several semi-anthracites to anthracite seams ranging in thickness from a few inches to several feet from 1m-15m (Bamford, 2019). The area is characterised by elevations ranging from 50m to 250m above mean sea level, with the highest hills reaching 350m above mean sea level.

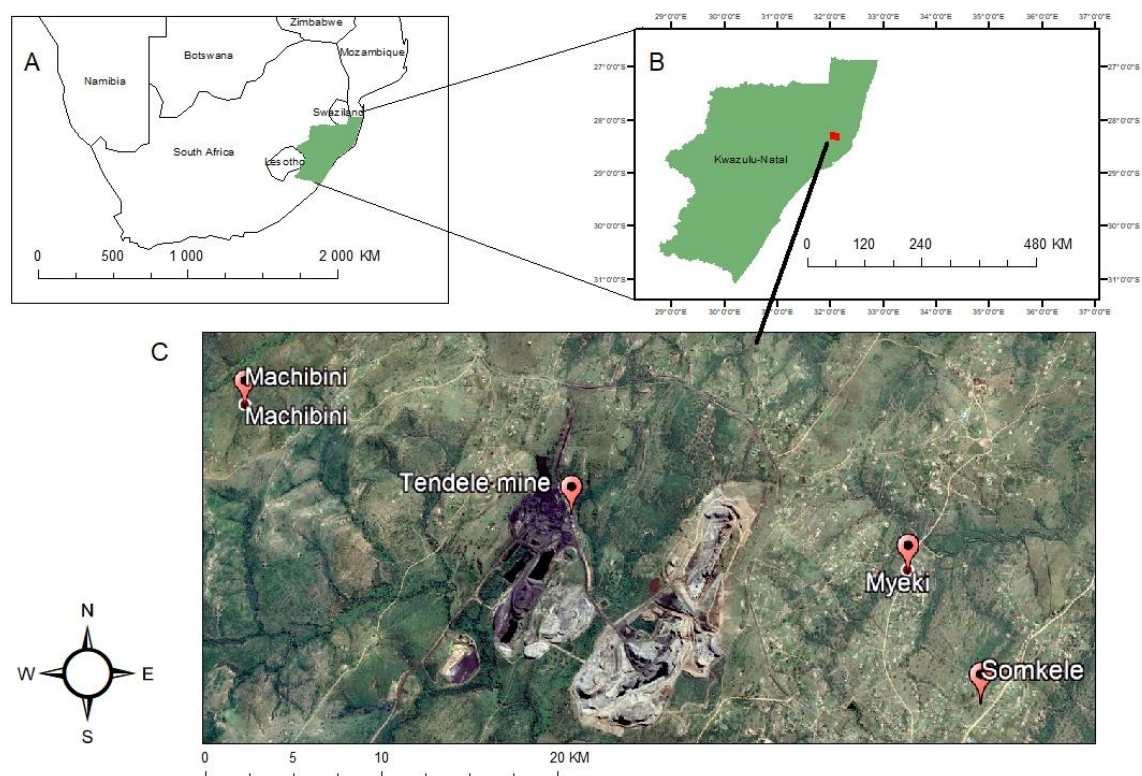


Figure 3.3.2 shows the study area of Mpukunyoni

The climate at KwaMpukunyoni is temperate and warm. The rainfall in Mtubatuba is crucial, with high levels of precipitation during the driest month. The warmest month of the year is January. The coldest month of the year is July, with an average temperature of 25.4 °C in January (Eco-pulse Environmental consultancy services, 2014). The land is dominated by grazing and subsistence farming because of the generally unsuitable soil quality for agricultural purposes. Somkhele is dominated by wooded grassland. However, at this point, it would be useful to clearly define the Vegetation of the Somkhele area development activities that have occurred. This EIA report reveals that no listed threatened ecosystems occur within any of the proposed mining sites in Somkhele, and none of the sites has been flagged as comprising a biodiversity priority area of high conservation importance (Eco-pulse Environmental consulting services, 2014). But this has been challenged by the local NGOs and the local community. The information presented was drawn from the soils and land capacity specialist report dated 15 May 2013 and compiled by GCS. This report examined the soil capabilities and land use for the proposed mine extension areas that are anticipated to be mined in the short to medium term. The report states that 51% of the land in the Somkhele area is suitable for arable use, and 12% is suitable for grazing (GCS water and Environmental consultants, 2015). The information was drawn from the preliminary wetland impact assessment dated 6 May 2014, compiled by GCS. The report identified 20 potential wetland units across all the proposed mine areas in KwaSomkhele. In addition, the report noted that all the proposed mine expansion areas drain into the Nyalazi River (GCS water and Environmental consultants, 2014).

3.4 The Sampling Frame and Sample Size

This section addresses the sampling methods used to collect primary data based on the research methodology and design. The chosen data collection tools were questionnaires, interviews, and focused groups. Three sources were used for primary data collection, mainly: the community members from the five communities, Community activists, local and international civil society organisations, i.e., Global Environmental Trust and ActionAid. The researcher sampled 20- 25 households per community for the questionnaire surveys; this is done to get a sample size that will be enough to represent or justify the outcome of that community, the reason for this sample size and the population is rooted in the notion that the houses in each community are widely dispersed, and it is very time-consuming because in some communities within that area are child-headed during the day making very difficult to conduct interviews. The researcher understands a larger sample size is better due to an increase in the likelihood that there is an

accurate representation of the community sampled, however obtaining a large sample size is possible but it would be time-consuming because the homesteads are sparsely populated in the four study areas (Trachoma, 2006). As a researcher, I reached research saturation and the likelihood to cast and stretch my sample size widely to gather as much data and increase the confidence in the results obtained would have contributed significantly but due to time constraints, it was not doable.

Sampling can be defined as "the process of selecting units (e.g., people, organisations) from a population of interest so that by studying the sample we may fairly generalise our results back to the population from which they were chosen" (Trachoma, 2006). Individual households have been selected as the primary sample unit from five different communities. These are Emachibini, KwaSomkhele, eDubelenkunzi, KwaMyeki and Ophondweni. The researcher purposively samples 20-25 households per community for the questionnaire where the researcher was asking any individual at random, interviews were scheduled according to the availability of the participants, and focus groups; therefore, resulting in a sample size of approximately 80-100 to get an insight of how each village amongst the four are changed due to the mining activities.

According to Overton and Diermen, (2003), research is not always neutral due to a lack of time and resources. Because researchers cannot see the entire population, a representative sample of the population is chosen to reflect the entire population.

In the Emachibini community, the researcher walked long hours on a hot day and sampled 11 households. This area is known as a no-go area for outsiders because there are violent attacks that generally occur in that community, and it was not ideal to enter as we did not have a community member from that village to accompany but the researcher was able to get two participants where the researcher was accompanied by two participants to other individuals they know who offered to assist and some much information was gathered (Overton and Diermen, 2003). Therefore, there was not much information collected by the researcher because the researcher's safety was a concern in this village, this is an area where the mining started. Most beneficiary's small businessmen are in this area when they see a stranger coming in conducting interviews, they feel threatened that is why we only have scheduled interviews with participants we could get through word of mouth.

In the Ophondweni community, 17 households were sampled by the researcher and 6 randomly sampled interviews. This area is already exposed to the mining effects and is benefited both negatively and positively by the operations of the mine. The positive benefits include some of the family members being employed by the mine and some individuals have been promised to have a particular settlement for relocation.

In the KwaMyeki community, 18 households were sampled, in this community access was not difficult and researchers were able to talk to the people who are working for the mine that reside in this community. Most of the people in this community experienced a high rate of poverty. Their main source of income is mostly dependent on social grants. This community is considered a future mining area.

In Dubelenkunzi, 15 households were sampled, in this community, mining has already occurred which makes the residents feel uneasy due to the impacts and effects they have observed from other villages and people in this community are reluctant in going ahead with the agreements proposed by the Tendele mine authorities Dubelenkunzi is considered a future mining area; therefore, expectations from the community are not high the 15 households that were sample no individual is pro-mining.

In KwaSomkhele, 20 households were sampled. The researcher also had 10 unplanned individual interviews (people who made themselves available as we were leaving the community). This is the larger area, and it involves directly affected individuals and, in some areas, it is considered as a future mining area.

Somkhele village is the largest in terms of size among the five sampled villages. This village is known to have deep cultural and patriarchal characteristics. In one of the interviewed households, it was strictly stated that no female wearing long pants should enter any household. Females are instructed to wear long dresses or pinafores (it is called Iphinifa in isiZulu). This shows that in some households, there is still a belief that a female should wear long dresses and no long pants; this includes jeans and tracksuits.

Two sampling methods can be used by researchers probability and non-probability methods. In this case study, both methods were used. Probability methods included random selection where a researcher will randomly select participants in the study area and allow the researcher to make a statistical analysis of the whole group. In contrast, non-probability involves non-random selection but is based on the convenience of the participants, which allows accessing

data collection (Trachoma, 2006). The researcher utilised both random and non-random selection. The reason to employ these strategies was to make sure that the data is not biased as in random sampling, the researcher picked the participants at random intervals, whereas in non-random sampling, the researcher had a pre-organized schedule with the participants for interviews.

Random sampling is when an individual reduces unbiased results by randomly selecting individuals in a sample population. Non-random sampling is a process where a researcher selects an equal number of participants in a sample population. These people may belong to a particular group. For example, if a researcher selects ten males, he will have to select ten females as well to make the study balance and not be biased as opinions may differ depending on gender, age and class. During the research, the researcher sampled some participants at random when a researcher arrived at a village he would approach the participant and ask if they are okay to participate in the study research if the participant agrees to be part of the study then everything is explained to them, or the researcher would select any household at random.

According to Emerson (2015) Convenience sampling refers to the selection of study participants based on their availability. Because not every household in the community had someone available to participate, this technique was utilized to select individual households in the communities. Convenience sampling worked because not every participant was willing to participate in the study, and it enabled the researcher to obtain information from those who were readily available through a meeting set-up. The strategy was time-consuming as the villages are sparsely dispersed, which meant the researcher had to first confirm with the participant in terms of availability before going to the village (Emerson, 2015).

A non-probability method of survey sample selection, snowball sampling, often referred to as chain referral sampling, is typically used to identify unusual populations (Emerson, 2015). Finding and choosing one individual, then asking whether they can recommend the researcher to another person they know who could have more information or be willing to engage in the research, is known as a "snowball sampling." (Emerson, 2015). This referral process continues until the researcher has located an adequate number of eligible respondents in many applications. Goodman (1961), Erickson (1978), Frank (1979), and TenHouten et al. (1971) showed a technical assessment of snowball sampling. Biernacki and Waldorf (1981) further explored practical considerations in deploying snowball sampling. Waldorf (1981). The snowball sampling strategy was used to select relevant participants in the study. Using this

technique helped the researcher to get a larger sample as most participants were not in one section of the village. The researcher understood and anticipated the position of those directly affected by the mining operation and distinguished them between those who are not directly affected. This method had its pros and cons for example when using snowball sampling the researcher might end up getting similar responses from different people because one person will refer you to the other whom they share similar difficulties but in different communities, the good thing about it is that the researcher can be exposed to individuals with connections and might provide you with reliable information.

Figure 3.4.1 below shows the five sampled and researched villages in Mpukunyoni.

Attributes	Research community				
	KwaMyeki	Emachibini	Ophondweni	dubelenkunzi	KwaSomkhele
Settlements	- had more than 15 households that were sampled -semi-sparsely distributed -few households are built with mud -most households are built with mud	- had less than 15 households that were sampled - comprised of sparsely distributed - a few households are built with bricks -most houses are built with mud	-had less than 20 households sampled -it is semi-sparsely and sparsely distributed - not all households are built of bricks	- Had more than 20 households sampled - Comprise of semi-Sparsely distributed. - Houses are built with bricks - Few houses were built with mud	- Had more Than 20 households - Comprise of semi-Sparsely distributed - not all houses are built with bricks
Structure of houses	-it is male-dominated households	-it is male-dominated households	- It is female-dominated households - It has few males dominated	It is female-dominated households	It is both males and Female dominated households

livestock/or Crop farming	- livestock farming	- livestock farming	- both livestock and crop farming	both livestock and crop farming	Both livestock And crop farming
Service provided (e.g. schools, road, electricity, tap water, clinic,public halls)	- it is a gravel road -some areas have electricity -no tap accessible water -there is a clinic and public hall -school (foundation phase)	- it is a gravel road -there is electricity -no tap accessible water - there is no public hall or clinic -there is a school (foundation and intermediate phase)	-it is a gravel road - there is electricity - no tap accessible water -there is a public hall and a clinic - there is a school (primary and high school)	It is a gravel road - there is electricity - no tap accessible water -clinic and public hall - there is a school (senior phase further education and training phase)	It is a gravel road There is electricity No tap water Clinic and public Hall There is a school Primary and high School
Community structure	- Inkosi - Izinduna	- Inkosi - Izinduna	- Inkosi - Izinduna	- Inkosi - Izinduna	Inkosi Izinduna



Figure 3.4.2 shows Oscar (Researcher) reading the questions for the focus group.

The total sample size from the Five communities had 60 questionnaires, 20 interviews and 10 focus groups altogether. The participating participants were adult members only (18+ years). The researcher used two sampling strategies to ensure that the selected population sample represented diversity (in terms of age, gender, experiences, and roles).

3.5 Research Techniques/Methods

According to Kitchin and Tate (2000), Data are collected in a variety of ways that make it simple to describe and analyse. Structured questionnaires, in-depth interviews, and observation were employed in the field to collect data for this study. Qualitative approaches help people comprehend the world through interacting with, empathizing with, and interpreting the actions and views of the study's actors, according to Bryman and Burgess (1999). Quantitative data and quantification can be used in qualitative research.; for example, qualitative methods give

details and formulate themes within the research, whereas quantitative data gives the researcher the numbers that are expressed in any numerical format. In this research, the themes that are presented showed air pollution, followed by land degradation and noise pollution.

This study is qualitative, where the researcher had to learn the cultural way of the people of KwaSomkhele. This was not difficult since the researcher is from the Zulu culture with different customs and norms; therefore, qualitative data elements were visible. “Ethnography is a study of people and their cultures in a systematic way. Ethnographic approaches convey reality from a subject's point of view (Brockington and Sullivan, 2003). Since this study was actor-orientated, it was important for the researcher to employ ethnographic methods such as observation and oral testimony to emphasise the legitimacy of the researcher's interpretation of the observed culture and to allow people to speak for themselves” (Brockington and Sullivan, 2003).

The questionnaire and the semi-structured in-depth interviews were adopted as the primary tool for data collection, whereas oral observations and informal conversations were used to collect additional data, to be further explained in the following section.

3.6 Semi-Structured, In-Depth Interviews

It is important to understand how what sets of questions to ask in an in-depth interview. An explanation of semi-structured, and in-depth interviews is highlighted below. According to Maccoby, (1994) An interview can be defined as a face-to-face verbal conversation in which the interviewer asks the respondent for information or their expression of an opinion or viewpoint (Maccoby & Maccoby, 1954: 499). Interviews help in the investigation of complex motivations and behaviours. (Dunn, 2000). In this study, the researcher used approximately 80 questionnaires as a data collection method. Curry et al. (2009) suggest that the interview structure must have a degree of a pre-planned order of questions meanwhile allowing flexibility in how issues are addressed by the informants. This style was adopted in this study. Semi-structured interviews were conducted with the community members, and local community, including ActionAid, Mining Affected Community Unite Action and Global Environmental Trust. A larger percentage of interviews conducted in this research were done face-to-face with the participants. It was not challenging for the researcher to note the informant's body language and facial expressions, also it was easy for the researcher to refute who allegedly discover the public perceptions and opinions.

3.7 Structured and semi-structured Questionnaires

The purpose of questionnaires is to extract quantitative descriptions and information of a set of characteristics about a population or sample group (Groves et al., 2009). The questionnaire is used to collect data that reflects the respondent's attitudes, opinions, and experiences (Ngila, 2009). According to Parfitt (2005), questionnaires are functional classifications of people, circumstances, and environments. Questionnaires are familiar and user-friendly to most people, and they take less time to complete. The questionnaire was designed to incorporate both descriptive and analytical questions. This incorporation aided in capturing a combination of objective and subjective information about the respondent and their environment (Parfitt, 2005). According to De Vos et al. (2002), qualitative research entails eliciting participant accounts of experience, meaning or perceptions, while quantitative research methods focus on deriving numerical data to describe variables and the relationship between the variables. The researcher used open-ended questions to ensure that participants are free to express themselves and their opinions without feeling controlled by structured questions to answer. The questionnaires employed in this study included structured and semi-structured which allowed the respondents to be flexible when voicing out their feeling and opinions regarding the researched problem. Since questionnaires do not allow for a deep understanding of the subject matter (Overton and Diermen, p56, 2003), the researcher relied on additional data collection methods mentioned above, for example, informal conversation, observation and oral testimonies.

The survey instrument used in this study comprised of open and closed-ended questions, with the following thematic areas:

1. Socio-demographic profile of respondents.
2. Household demographics.
3. Biodiversity, conservation, and coal mining conceptualisation. i.e., how does it feel like to be in a mining environment?
4. what are the benefits, impacts and plans of the Tendeles coal mining Project.
5. Perceived impacts of the Tendeles coal mine on the community

These thematic areas were critical for addressing the research questions in line with the objectives of this study. The first section was designed to extract the socio-demographic characteristics of individual respondents. Section two provided further insight into household livelihoods, which enabled the study to comprehend the community's socio-ecological context. Section three aimed to reveal respondents' perceptions, levels of awareness and knowledge regarding critical environmental concepts and how respondents value and perceive their natural surroundings. The fourth section aimed at finding out if the community knew about the Tendele mining project. Moreover, the fifth section looked at how this project affected the respondents and their views on the effects and impacts they see happening in their everyday lives.

3.8 Observation

According to Kearns, (2000) Observation is carefully documenting phenomena as they take place. We never really see everything that is there to view, this observation is the result of active decision rather than sheer exposure. As a result, observation can be seen as a way a researcher participates in the study rather than merely representing it. Both participatory and non-participatory observations were used in this study. The researcher participated in community and local civil society meetings. In these meetings, the researcher collected data by non-participatory observation and recording the proceedings of the meetings. Also, local site visits played an essential role for the researcher to gather data through the participatory observation of the setting within the study area, exploring how people are the participant's livelihoods. Brockington and Sullivan (2003), state that “an observation also provides complimentary evidence by gathering additional descriptive information before, during, or after one more structured data collection form. The researcher needs to immerse themselves in the place/society they are studying. To achieve this, the researcher did repeat visits to the research communities while taking notes of their surroundings by spending time in the community after completing a questionnaire. By doing so, the researcher added value and a descriptive element to the research. A possible limitation to using observation as a research method is that people can easily change their behaviours as soon as they see an outsider (Brockington and Sullivan, p68 2003).

3.9 Oral Testimony/Informal dialogue

The research participants narrate their stories as part of this technique. This technique is beneficial since it provides unique insights into previously unrecorded circumstances as well as alternative perspectives on issues (Brockington and Sullivan, 2003; Kearns, 2000).

Oral testimonies are advantageous because they are informal, and therefore, respondents are comfortable, very informative, and feel in charge (not the other way around) of the interaction because they are telling the story. The researcher used 10 oral testimony and 7 informal dialogues when he interviewed elders in different communities. Through this technique, the researcher collected data that was useful in providing a broader and more precise context. In this research, oral testimonies were conducted at the KwaSomkhele village. In some families interviewed, most individuals wanted to contribute to the study as a group. Therefore, it was easier to have an open discussion.

The collection of data was translated during the transcription process, and important relationships and themes associated with the research aim and objectives were identified. Such themes include how participants responded to the challenges they came across before and during the mining commenced in the area. Through deductive reasoning, testing an existing theory in a thematic analysis process (Hesse and Bieber, 2010), themes that came into play included Loss, pain, betrayal, and lack of trust amongst the communities. These themes came into play as the researcher was analysing the fieldwork/site visitation and applying political ecology concepts about subjectivity.

Data Analysis

Data collected was transcribed. During the transcription process, basic themes and relationships that link back to the research aim and objectives were identified through a deductive coding system. This process is called thematic analysis (Hesse and Bieber, 2010).

The researcher followed steps and processes identified in Bryman (2012) in the analyses, which included:

- Step one: Reading of interview transcripts and transcribing interview recordings
- Step two: the next step was to label relevant pieces of information related to the research

- Step three: then the researcher decided which codes are important and created categories based on the reoccurring themes
- Step four: the next step was to label the categories and choosing the most accurate options that best answers the questions of the study

The researcher will make use of the theoretical framework, Environmental Justice Framework, and Political Ecology.

3.10 Validity of the study

According to Guion et al, (2011) “In qualitative research, the validity of a method used to collect data refers to whether it provides the information relevant to the research questions posed (Guion et al., 2011). The use of different data collection methods in this study strengthens the validity of the study. In ensuring that data collection is relevant to the research.” All the questionnaires and interviews were conducted in the participant's language of choice, dominantly IsiZulu and English; this assisted to avoid communication errors and bias between the researcher and the participants. If the Participants agree with the researcher, all interviews, questionnaires, and oral testimony were being recorded. The researcher's handwritten notes also supplement these. Triangulation is one of the approaches used in this research. Triangulation refers to using different data sources or methods in a qualitative study to get a comprehensive understanding of a phenomenon. More than one method was used in the data collection of the same research study. However, some other studies and Methods help collect primary and secondary data besides those used in this study.

3.11 Limitations of the study

The biggest challenges and limitations of this study were that the basis of this research is centred on an ongoing project development that has been operational for years. It is always good to make sure that one is always kept up to date because things change as they move along. Some of the sampling methods, such as snowball sampling, were time-consuming because a researcher gets participants who are willing to be enrolled in the research study. Due to some uncertainties in the study area, participants can quickly change from being friendly participants to viewing the researcher as an enemy. The researcher was prepared to navigate through such difficulties by ensuring that the participants are well respected. One participant had an issue because he believed that I might be an employee of the Tendele coal mine, so the researcher

had to re-explain everything and reassure them about being independent research calmly, and everything was right after that. One other challenge is that it was not easy to obtain data because many disruptions occurred, one significant disruption being a protest that took part whilst we were still in the data collection process. It was challenging for the researcher to have enough time for the data collection with all these uncertainties. It was limiting because some participants believed that the researcher is part of their NGO and not an independent researcher. It was hard to distinguish myself and show them that I am here to hear both sides, including the community and the Tendele coal mine. Furthermore, interpretivist studies accept that this is a reality of the social world which means that interpretivists want to see the world through the eyes of the person that is being studied. It was not difficult to distinguish myself and clearly state that I am an independent researcher interested in the truth and is not affiliated with any organisation presented to him. The community members were delighted to have met such an outspoken individual, and everything was clear to everyone.

Conclusion

An overview of the methods used to collect and interpret data from the study site in Mtubatuba Kwa Mpukunyoni was provided in this chapter, research design and research methodology used for data collection during the research process. A case study approach was used, explicitly focusing on community perceptions of mining in KwaSomkhele in KwaZulu-Natal. This chapter provided insights into the techniques implemented in the study area. Moreover, how these techniques influenced the overall study. Different themes were evident, resulting from the primary and secondary data used for this study. Limitations and challenges experienced with conducting the research study were also highlighted. The KwaSomkhele site was identified as a suitable location because it involves living in an environment surrounded by the mining company. The next chapter will focus on the background of the study area and expand more on the history of the study area and give insights into the structural systems of the Somkhele area.

Chapter 4

Research Analysis

Introduction

Over the last decade, there has been a range of perspectives on the effects of mining on the social-cultural issues in society and on mining adjacent communities. While it is admirable that mining creates vast revenue for the nation, this industry has been associated with adverse human and environmental impacts (Mancini, 2018). This Chapter aims to make sense of mining adjacent communities' experiences and subjectivity which will be further explained in chapter 5. However, facts need to be presented that were found during data sampling and collection. In this chapter, the focus will be on addressing issues surrounding the operation of the Tendele coal in the proximate communities. The TPSN (Territory, Place, Scale and Network) framework will be used to discuss what is happening in spatial terms and give a clear and distinct understanding of the spatial dimensions of change in KwaMpukunyoni. The framework focuses on four elements of social relations, which are territory (T), place (P), scale (S), and network (N). According to Jessop et al. (2008), the four elements are not the only and most essential elements in studying social dimensions; however, this approach assists in confronting problems associated with one dimension in social relations. As mentioned in chapter 2, the four dimensions of socio-spatial relations are analysed according to their interactions. For this chapter, I use the TPSN framework to give a descriptive explanation of how the different role-players of KwaMpukunyoni interact with each other; therefore, unpacking the complex scene in which the research is conducted.

This chapter will start with the history of Mpukunyoni and the Mine territorial discussions in the framework. Descriptive information about the sampled villages will be provided and will further give definitions. Information about stakeholders and stakeholder engagement will be presented at different levels of the research. A focus on groups that share similar ideas and how they network with each other will also be included in this chapter. The study area is centred around KwaMpukunyoni, which is a rural place in the northern part of Kwazulu-Natal. Inkosi Mkhwanazi is the chief and the Mpukunyoni traditional authority. Mpukunyoni is well-known for its agricultural practices. The town Somkhele is famously known for its deep-rooted traditional customs and named the local icon "King Mtubatuba", who died in 1930. Mpukunyoni has 30 chiefs placed under each village to control and regulate societal issues,

concerns, and progress. Mpukunyoni community lost one of their inspirational leaders and chief, Umuzi, Ondlondlobelayo Mkhwanazi, in 2000

These spatial dimensions will provide and give information about the sense of a place, its scale, territory and most importantly, the networks and how are all these intertwined. These will provide profound information about the sense of a place its scale territory, and, most importantly, the networks associated with mining, the traditional authority, and environmental NGOs, and how they are intertwined and contested.

This chapter will cover the following sections. History of the Tendele mine and Mpukunyoni area, Evolution of KwaMpukunyoni from subsistence farming to mining, mining and the post-apartheid transition in KwaMpukunyoni. KwaMpukunyoni as a changing place and Stakeholder engagements in Mpukunyoni. Competing Discourses in KwaMpukunyoni and Participants' responses in KwaMpukunyoni will be covered in this section.

4.1 History of the Tendele mine and Mpukunyoni area

History is essential because it tells us about the past, which is crucial in understanding the present, and helping us plan and prepare for the future. To understand the difficulties faced by the Mpukunyoni community, we need to understand the history of the area and the Tendele coal mine. This information will give us a direction and a history of the Mpukunyoni community and Mine in detail. Mpukunyoni lies in the North of Kwa-Zulu Natal which consists of 30 villages in total. Some of these villages are situated in remote areas where there is a transport issue.

During the apartheid era, some laws and acts prevented black people from owning or buying land (Natives Lands Act 1993). This act was implemented by the government of South Africa (white) during the apartheid era. Di Noi et al, (2019) states this brought a lot of hardships to the black people in South Africa because the majority of people were black, and the land was owned by the minority white population even today the majority of the land in South Africa is owned by the minority. There was an introduction of the Mines and Workers Act (1911) and its amendments (1926) under this act the black mineworkers were excluded from skilled labour this meant that no black person could be found competing for the same position with a white individual. A certificate of competency was needed and during that time it wasn't easy for a black person to acquire such certificates (Di Noi, Claudia, et al, 2019). During the Apartheid, the governmental racial segregation policy fostered and encouraged reliance on cheap black

labour. This was done to legitimize the division between a small group of white owners in charge of mining operations and larger numbers of black workers involved in day-to-day operations. According to Snyder (2004), the Constitution of the Republic of South Africa Act 200 of 1993 served as an interim constitution during the transition, and the Act had geopolitical implications. South Africa's original four provinces were divided into nine provinces with new names because of the Act. This information is used to connect pre-1994 references to South African conclusions made post-1994 (Snyder, 2004).

With the industrial revolution playing its role in steering the world into mining, the area of KwaMpukunyoni in Mtubatuba is still transitioning from subsistence farming to local mining geography. This land is no longer available for Mpukunyoni residents to cultivate. The gradual changes created environmental disturbances as observed in industrial companies' current activities, including mining activity. There are different mining developments in the Northern part of KwaZulu-Natal that are similar to the Tendele coal mine. Such mining developments show how mining has shaped the northern part of KwaZulu-Natal over time. It can be said that the environment has changed through different mining activities. In the following section, a summary of these projects will be provided. To give an insight into how the past has influenced what is happening in Mpukunyoni.

Richards Bay Minerals (RBM) is a mining company situated in the northern part of Kwazulu-Natal that produces titanium. According to Williams and Steenkamp (2006), "The presence of relevant minerals on the north coast of KwaZulu-Natal, South Africa was first scientifically documented in the 1920s". However, the detailed investigation of the Richards Bay area by the Industrial Development Corporation (IDC) occurred in 1971. The operations of Richards Bay Minerals mine started in 1977. Richard Bay Minerals produces 2 Mt of product per year. With this amount of product being produced per year, one can wonder how the environment is handling such pressure. Since the commencement of the RBM, there has been a dune rehabilitation program; this is a coastal dune ecosystem forest program that has received global recognition. Williams and Steekamp (2006) mention that communities in the surrounding area of the Mine have benefited from the Richards Bay Minerals program, which includes water and sanitation, business development, health, agriculture, and education (William and Steekamp, 2006).

Another mining project that is operational in the northern part of KwaZulu-Natal is the Zulu Anthracite Colliery. "The Zulu Anthracite Colliery is a producer of Anthracite. It is located

approximately 48km north of Ulundi in KwaZulu-Natal. Its resource discovery was in 1981 by Transnatal coal BD Utah Mining JV and developed in 1985 by BHP Billiton. The mining operations of ZAC commenced in 1987 before ZAC acquisition in 2016". Zulu Anthracite colliery has rail access when exporting or transporting Anthracite to local and international consumers. ZAC is a supplier to key international and South African markets. It is mentioned that in February 2005, Riversdale Mining announced that it had come into an agreement that acquires 74% of ZAC. The Zulu Anthracite Colliery has a 17-year mine life with a possibility to extend based on exploration success. These mining projects shaped the communities in northern KwaZulu-Natal in different ways. They are important for the local economy boost but the environment suffers along with the vulnerable residents. It has been reported by Global Environmental Trust that ZAC has been operational in the area for about 40 years. The dam that is used by the mine collapsed on December 24, 2021, spilling poisonous coal slurry into rivers that flow through rural communities and the historic park. It has been alleged that between 10 and 14 January 2022, the mine agreed to give water to the "Jahidada" community, and this was not accomplished. This is to show that there is a link between how the communities of Mpukunyoni suffer through coal mining and other communities experience similar treatment.

The discovery of significant quantities of anthracite in the Mpukunyoni area transpired in the 1880s, which led this place to be the subject of numerous prospecting and mining projects. In 1895 the construction of a railway line commenced in anticipation of the coal mining at KwaSomkhele. The railway commenced operations in 1901 from Durban to KwaMpukunyoni (Affidavit, 2018). The first Commercial extraction of anthracite in Mpukunyoni occurred between 1903 and 1909. In 1936 and 1939, the Umfolozi Co-Op, sugar Planters ltd was one of the companies to test the anthracite's suitability from Somkhele for their sugar mills near Mtubatuba. It is estimated that Sugar Planters subsequently utilized around 300 tonnes of anthracite.

In 1965 JCI Mining (Pty) Ltd acquired a concession over an area extending from the Nongoma-Mtubatuba Road in the south to the south-eastern corner of what was then the Hluhluwe Game Reserve, constituting an area of 168 square kilometres (Affidavit, 2018) Between 1966 and 1976, JCI searched for anthracite in what is now known as Somkhele, drilling numerous boreholes. The exploratory drilling results showed a total of 7.9 million tonnes of anthracite to a depth of 300 meters in an area of 330 hectares with an open pit potential mining. In 1976 and

1982, JCI drilled more boreholes, and a geophysical survey was conducted, which identified the further potential of anthracite reserves. Again in 1979, JCI acquired prospecting rights and authorization and drilled more boreholes searching for more anthracite reserves (Affidavit, 2018). In 1986 and 1987, more drilling activities were in place by JCI in Somkhele. In 1994 and 2004 another company known as Afriore Ltd (AfriOre) showed interest in mining in Mpukunyoni. In 2001 and 2003, AfriOre drilled boreholes under a mining license issued in terms of the now-repealed minerals act 50 of 1991 (Minerals act). In 2004 AfriOre sold its interests in Somkhele to a New Africa Mining Fund (NAMF) (Tendele answering affidavit, 2018).

In 2005, Petmin Limited, the holding company of Tendele, purchased all the anthracite interests held by NAMF in Somkhele. Subsequently, Tendele commenced mining operations in Somkhele in 2005/2006 under the grant of a mining license and subsequently a mining right and the approval of an Environmental Management Programme. Even though the Somkhele mine comprises a single mining area, the mining operations are divided between five areas, and individual mining rights apply to different areas (Tendele answering Affidavit, 2018).

Not far from the Tendele coal mine in KwaMpukunyoni, there was an application filed by Ibutho Coal Pty Ltd for anthracite mining in 2014 to the Fuleni community. This Mine was going to be an open cast mine. The then-proposed Fuleni mine project is on a portion of a farm Fuleni reserve in the Empangeni magisterial district north of KwaZulu-Natal. Six villages (eMakhwezani, Fuyeni, Novunula, Ntuthunga1, Ntuthunga2 and Ocilwane) would have been impacted if this mining right was granted. In 2016 the Fuleni residents protested the Ibutho Coal Pty Ltd. With no success to get the mining license, there was another attempt in 2018 to the Fuleni community by Invukuzane Resources. The Global Environmental Trust and Ezemvelo KZN Wildlife alleged that this mining company might be the same company that was rejected by the community in 2018 and it is using a different name. It was also alleged that at least 16500 will be affected by this activity if it was a success.

Reflection on these developments in Mpukunyoni and how it has been transformed through the mining activities occurring in the area the concept of territory can be applied. Territory refers to "a unit of contiguous space that is used, organized and managed by a social group, person or institution to restrict and control access to people and place" (Human Geography Dictionary pp.746). Territory refers to any socially constructed geographical space taking into consideration the identity and local cultural differences. Such socially constructed spaces are

characterized by bounding, enclosures and physical bordering, producing inside/outside divides. The study site consists of three territories.

The first territory is what I term an existing territory this is where the Mine has commenced the mining operations and relocated people and graves. This is the history of how the community was living before mining and relocating of people and graves commenced. This territory is termed as existing because this is where all the operations are taking place (Emachibini, Dubelenkunzi and EMahujini), with the Mine operating on the ground with heavy machinery and the community on the receiving end of the impacts caused by the operation of the Mine. Selecting a directly affected community is because of the changes observed by the community members and how these changes impact their livelihoods. The first territory includes the Tendele coal mine and the directly affected community as mentioned above (Emachibini, Dubelenkunzi). At the same time, the second communal territory includes the affected communities that fall outside the Mine mining area (KwaSomkhele and Ophondweni). This territory is also significant because it shows us the space in which the mining impacts are experienced.

The second territory is what I have termed as a non-active territory because there is no activity taking place in terms of mining or relocation, but the impacts that are experienced are similar, for example, their shortages of water, there are cracked houses, and there is water contamination by coal residuals in both territories the only difference is the relocation of graves and people. The last territory is termed as a future mining area. This is because there has been exploration, this is a territory that is not heavily investigated in this research due to its environment not being altered in any form Ntandabantu and Luhlanga are villages where the mining nor exploration has occurred, but the mine representatives are filing for an of the existing mining rights. The extension of the mining rights areas includes EMahujini and Ntandabantu.

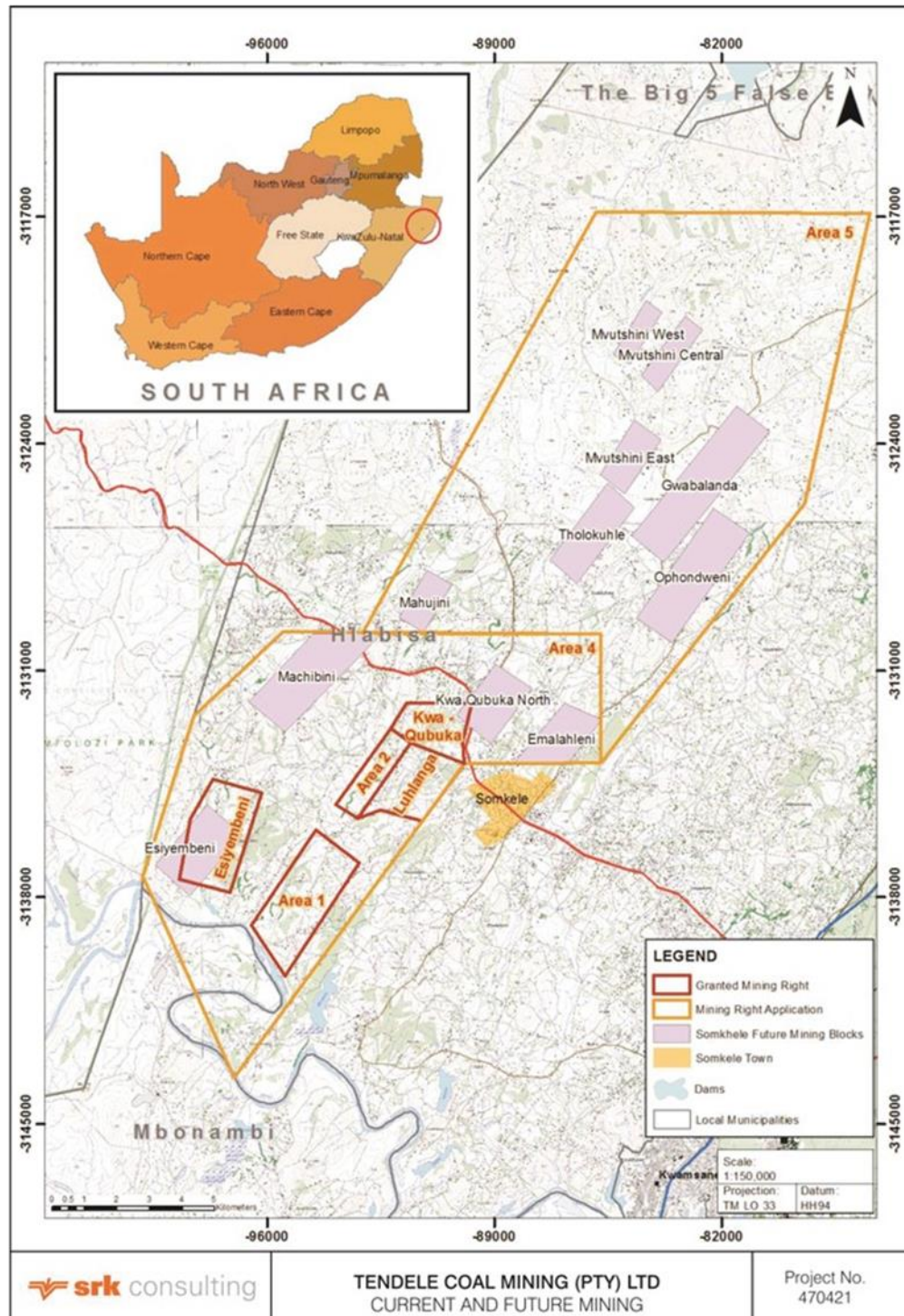


Figure 4.1.1: Depicting future & current mining areas, where the mining right is granted at Mtubatuba KwaSomkhele (Srk consulting for Tendele,2018)

Returning to Tendele, an Environmental Management Programme (EMP), as contemplated in the now section 39 of the Mineral and Petroleum Resources Development Act, was approved

by the Department of Mineral Resources regarding each of the Tendele mining rights. Accordingly, on May 14, 2001, Petmin did prospecting in Mpukunyoni, and Tendele took over from AfriOre and executed a mineral lease and prospecting contract with the Ingonyama trust. Tendele then commenced its mining operations on July 1, 2007, in KwaQubuka and Luhlanga areas. It is alleged that since 2006 Tendele spent more than 1.2 billion in establishing mine infrastructure and purchasing mine equipment at Somkhele (Tendele answering affidavit, 2018).

Local NGOs such as Mining Community Environmental Justice organization and Global Environmental Trust mentioned that the proposed mining in Emalahleni, Ophondweni and EMahujini is necessary to continue the Somkhele mine as the anthracite mine in the already existing mining areas (Luhlanga and Kwaqubuka) will be depleted by September 2020. Emalahleni is situated to the east of the existing mining operations in Kwaqubuka and Luhlanga, while Ophondweni is situated approximately 8km northeast of the existing operations. The mining method is similar to the existing mining areas, namely the conventional opencast strip mining. This method involves stripping the overburden from the initial cut, stockpiling it, and backfilling the previous cut with the overburden when it is safe to do so. In this way, the soil can be replaced very close to where it was taken from (Tendele answering affidavit, 2018).

4.2 KwaMpukunyoni as a Changing Place

"The area of Mtubatuba has evolved dramatically since the arrival of the mine. Not only being reformed through job security but there is a lot that has been happening in the area for the past years. It all began through farming and plantations, since then the area has been transformed and slowly being industrialised" (Sis Zama, 08/04/2019).

The Kwa Mpukunyoni area has evolved since the arrival of the Tendele Mine. Not only through job security for the communities but the landscape has changed where mining has occurred. A lot has been happening in the area for the past years. It all began through agricultural practices such as farming. Since then, the area has been transformed and slowly being industrialized through mining in the area.



Figure 4.2.1: depicts the mining pits at KwaSomkhele left in the open (Saveourimfoloziwilderness,2018)

The Pits are left open, as seen in figure 1, which creates further issues of rehabilitation that have not occurred as alleged by the NGOs. It shows that some initiated projects are not contributing much towards building and supporting community needs. Understanding how the people of KwaMpukunyoni talk and feel about their area lets us look at the transition of mining and post-apartheid.

“South Africa has gone through many political disruptions in the past such as the apartheid; these hardships have brought pain and suffering to the black community. There has been a gap between the rich and the poor in KwaMpukunyoni. The rich are getting more prosperous, and the poor are getting poorer. As a result, there are allegations that the Inkosi and induna are being paid by the Tendele mine to influence the community’s decisions to align with what the mine is proposing. The transition to post-apartheid has not been easy, especially for the people of Mpukunyoni, even though there seems to be a light of freedom, there are still hardships that hinder the full pleasure of freedom” (Participant 1).

The concept of place is one of the many concepts in geography that cannot be defined using one definition. According to Cresswell (2008), in a general sense, a place is a geographical locale of any size or configuration, which can be compared to the general meanings of area, region or location. As mentioned in chapter 2, human geographers have attributed place with a greater significance, usually defined as a part of the earth's surface that humans have transformed based on their own cultural and subjective meanings, through which it is constructed and differentiated. The place is discussed under two domains, used to provide a clear picture of the study site and the communities around it:

Places do not remain the same; instead, a place is continually changing and therefore evolving. For instance, a place can transform in a non-human way in which humans become one with nature. I.e., we find that the physical place has changed due to the activities involved. These include activities imposed by the Tendele to the community and the community response, which alters significantly with their way of life and the change in their space.

People in Mpukunyoni have a shared belief about their environment despite the challenges caused by developments in their neighbourhood. This shared belief is rooted in the way they speak about the place.

Respondent 1 10/6/2019 says *“each family may have different ways of doing things, but we all have the same objective. Our lives are rooted in the same ancestral belief, we perform the same rituals, and we have the same understanding of our environment and shared worldviews”*

The people of Mpukunyoni have a sense of belonging, not only seeing the problems but having the same belief in their cultural norms and spiritual well-being. They still see the tranquillity of their environment. Their ancestors make it easy to connect with the environment, which brings in a sense of belonging. However, people are still having the common shared goal of preserving the environment. The community speak positively about the place of KwaMpukunyoni they mention its rich cultural diversity with different ethnic groups whom all identify themselves as one with the environment.

Respondent 2 10/6/2019 mentions that *“Nature is our motherland, and everything we have comes from the environment, either directly or indirectly. It is with great pride that I state that Mpukunyoni cultural diversity has multiplied the indigenous knowledge and empowered many people to believe that, despite the challenges of environmental degradation caused by coal mining activities. The need to fight and protect the environment should always be our main priority. Through their cultural practices and way of life, from ploughing which to them is very important as they believe that nature will take care of nature if one is taking care of nature. This now shows the notion of shared ideas and having the same way of life. Some still use natural herbs for healing, starting from as simple as a fever to more complicated illnesses.*

According to Respondent 3 10/6/2019 who is a community leader, state that, *in as much as Mpukunyoni is a place of cultural diversity and harmony, there is poverty and many challenges faced by the community. Mpukunyoni evolved from farming and plantation (this is where family members will have different types of plants in their gardens and livestock) to commercialized*

land. Land commercialization occurred when the Ingonyama Trust leased the land of KwaMpukunyoni to the Tendele mine through the Mtubatuba Municipality. As noted in Chapter 2, previous mining companies once occupied the Mpukunyoni area, resulting in negative impacts and transforming what was once farming land into a mining asset.

Before the environmental change occurred, Mpukunyoni was and still is a rural place that is known for its agricultural practices. Before the environment changed in mining-affected areas, most individuals used subsistence farming, which helped a lot as respondents would get the food to cook in the back of their yards. The environment slowly changed as individuals were moved around, making way for the different Mining companies. This is where we find areas labelled as mining-affected communities due to activities imposed by the Mine that hindered their usual way of life. As mentioned earlier the place of Mpukunyoni has been changed from subsistence farming into a mining environment. According to the (IDP 2021\2022) further show the groupings different the major economic sectors are classified as follows: primary sector – extraction of raw materials – mining, fishing, and agriculture; secondary/manufacturing sector production of completed goods, e.g., construction of There is a gradual change, experienced in the Mpukunyoni community thus changing the livelihoods of the residents.

4.3 Scale, Networks and Stakeholder Engagement in Mpukunyoni

In social geography, scale refers to how social activity and processes are connected to other hierarchical levels and how the outcomes of these activities and processes contribute to spatially uneven and temporally unfolding dynamics at different scales. (Howitt, 2003, and Marston, 2000). This section will look at different stakeholders and their influence on the Mpukunyoni community and what scale and role each stakeholder plays within the community. This section will cover the importance of stakeholder engagement and stimulate local, regional, national, and international scales on stakeholder engagement in Mpukunyoni.

Every community in KwaZulu-Natal have a systematic way in which their issues are resolved. This system involves reporting to different stakeholders with different duties. In places that are affected by mining activities, we find different stakeholders at play. For example, let us look at how decisions are implemented within a community structure in Mpukunyoni. It can be said that there, is a Chief known as “Chief Mkhwanazi”, who then negotiates with the mine on

behalf of the community, it is alleged that community decisions are taken by the other chiefs who represent their communities. However, this has a negative effect on the communities when most decisions affect them collectively. Neethling et al, (2011) state When looking at the scale and its process, we need to start looking at the three government spheres (local, provincial, and national) that shape and control decision-making within the country and how this influence what is happening at the grassroots level where the most vulnerable individuals reside. The decision on mining-related issues taken on the national scale influences the provincial level and how things are done in each province by the Members of the Executive Council, and that influences how the local scale is transformed through policy implementation (Neethling et al, 2011).

The department of mineral resources plays a role in ensuring that the decisions taken from the top are implemented, and it is sometimes challenging to counteract such decisions. For example, The Tendele coal mine was granted a mining license by the department of mineral resources in 2007, this was done in the hopes of economic development not only for the municipality (local) but also for the province of KwaZulu-Natal and the country of South Africa. These scales play a vital role in the area of KwaSomkhele as we have seen the community coming together at the local level to challenge the decisions taken at the provincial and national scale as they made their way to the court on August 24, 2018, attempting to get the Tendele coal mine to comply with the rules set on the National scale as it was alleged that the Mine was not performing accordingly due to no environmental authorization and water license at the time of commencement.

The term network refers to spatial arrangements that consist of a collection of linked elements that typically exhibit a decentred and non-hierarchical form (Gregory et al, 2011). For this chapter, a network refers to the interconnectedness of the actors involved. For example, it is known that from the local to the global scale, stakeholders are involved in the Tendele coal mine. It is understood that Tendele is a subsidiary of Petmin. The main Stakeholder is the Tendele coal mine, a community with stakeholders from the Mine to the communities (mainly chiefs and Izinduna). Several Mpukunyoni mining forums were established after numerous consultations with various interested groups, including the DMR, traditional structures in the Mpukunyoni area, the traditional council, and the anti-mining networks including the NGOs operating in the Mpukunyoni such as Global Environmental Trust and MCEJO. These structures play a vital role in ensuring that people are kept updated with any future changes.

Within the communities, there are trustees; these individuals represent the community in land restitution issues. For example, in KwaSomkhele, there are trustees who liaise with the Mine for community support and upliftment. Furthermore, different environmental organizations help such trustees to make informed decisions for the community. There are different stakeholders at play to ensure how decisions are implemented within the structure of the communities.

According to Benn et al. (2016) define the term "stakeholders" as any group or individual that is impacted or positively or negatively by the actions and decisions of an organization. Therefore, stakeholder engagement denotes a willingness to listen and discuss issues of interest to stakeholders of the issue at concern. Any organization must be prepared to consider changing what it aims to achieve and how it operates by coming to a desired mutual understanding and enhancing accountability between the Mine and NGOs. There are different stakeholders in the KwaMpukunyoni area, where the Tendele coal mine is situated (Benn et al., 2016). The table below shows the different organizations and how they influence the community and promote human rights for mining-affected communities.

Organization name	Location	Objective(s)	Activities
Global Environmental trust	South Africa, Pietermaritzburg	To challenge and contain human activities that degrade, debase or harm conservation areas and sensitive or significant ecosystems	Promote and influence the wise use of the natural environment. Ensure that biodiversity is maintained. SaveOurImfoloziWilderness.
Mfolozi Community Environmental Justice Organisation	South Africa, (KwaZulu-Natal) Somkhele	To challenge the disturbing environmental projects and human rights upliftment.	Promotes community rights and protects the environment from destruction. Protect and promote biodiversity

Mining Affected Communities United in Action	South Africa Johannesburg	Seeks to strengthen people living in poverty, especially women and communities affected by mining.	Advocacy for respect for human rights, participatory in democracy and inclusive decision making, promoting and respect for women's rights
Action Aid	South Africa Johannesburg	Working against injustices and poverty worldwide	Advocacy for human rights and support: youth inequality, HIV/AIDS, Climate Change, Emergency, and conflict
Groundwork	South Africa, KwaZulu-Natal Pietermaritzburg	To improve the quality of life of vulnerable people who are most affected by environmental justice in South Africa	Solidarity and empowerment campaigns, Research: Energy justice and climate, waste, coal and Environmental Health
Centre for Environmental Rights	Cape Town, South Africa	Assist communities and civil society to know their human right to a healthy environment	Litigation and advocacy, legal research
Mtubatuba Municipality	South Africa, KwaZulu-Natal	Attend and assist community members with issues surrounding service delivery, and job creation and find ways to improve the community's livelihood.	
Petmin	South Africa, Gauteng	Mine and processes in South Africa	
Tendele	South Africa, KwaZulu-Natal	A coal mining company in KZN	

Figure: 4.3.1 Different stakeholders in Mpukonyoni.

The organizations mentioned above play a vital role in ensuring that the relationship between the people of KwaMpukunyoni and Tendele mine is challenged, and the communities' rights are respected and protected.

First, we have Local civil society organizations. These include Global Environmental Trust (GET), Mfolozi Community Environmental Justice Organisation (MCEJO), Mining Affected Communities United in Action (MACUA), there is also International Civil society: ActionAid. These local and international civil societies play a vital role in influencing Tendele coal mine pty (ltd). They try to ensure that the environmental aspect is considered in meetings and that human rights are not violated as this is prone to happen in the mining industry. Secondly, there are Tendele mine executives; these include the CEO (Mr A) of the Mine, the manager (Mr B) and operations managers. Moreover, the community representative of Mpukunyoni has the Mkhwanazi as the chief and the Mpukunyoni traditional authority. The traditional authority is made up of different members. These include the chief, Izinduna the municipality and a few of the community representative members; the Izinduna represent their villages. The decisions taken by the chief during the meetings with the engagements about the Mine and its operation in conjunction with Izinduna and the Mine will result in appraisal or failure (SaveOurImfoloziWildeness, 2018).

Stakeholder engagement is postulated on the notion that those groups who can affect or are affected by the achievements of an organization's purpose should be allowed to comment and input into the development of decisions that affect them. Situations arise when organizations do not engage but are forced to do so by the demands of society because of a crisis.

It can be said that between the Tendele coal mine and the community, there is fragmented stakeholder engagement because of decisions taken by the Mine, which hinders that engagement. This occurs when the community representatives meet with the Tendele mine representatives to discuss their problems and concerns. but their issues are not taken into consideration. These include the meeting that I was part of where the engagement between the mine representatives and the community members almost ended in a fight since both parties were not coming to a solid conclusion that will benefit both the Mine and the community. The meeting was on the 12th of June 2019 in one of the locations in Mtubatuba. This meeting was about the issues communities suffer from due to the activities of the mine (no water, dust from mine blasts). Some community representatives wanted the mine to admit to these concerns and find suitable solutions, but the mine representatives did not want to take any account of these

issues hence a fight almost broke out. In most cases, as seen in the Mpukunyoni community the community does not agree with the decision taken on their behalf by the community leaders as this always results in disputes between community members and their representatives for example. In one of the meetings in 2019, it was alleged that the community leaders ignored the concerns raised by the community in favour of supporting the Tendele mine, causing the community structure to become bitterly divided and the majority of the community members to lose faith in their representatives (SaveOurImfoloziWildeness, 2014). This shows that there is engagement, but it is not exercised to its full potential.

The five sampled communities have committees that represent their interests in the mine. These committees are said to be present in the contracts' drafting to be signed by the community members. Members of the community are said to be included in the planning, management, and decision-making of Tendele at every phase/stage of the development. However, literature (Pretty et al., 1999;) stipulates that community-based conservation initiatives fail because project developers gradually exclude local people as the project blossoms due to intra-community conflicts.

It has been alleged that not all communities respect the concept of having the chief and Izinduna; this is because some of the decisions that the Izinduna about the mine activities did not favour some communities. For example, in the Ophondweni community, individuals who are part of the community, do not condemn the idea of having induna, especially those relocated to make way for the Mine. On the other hand, we have some that are comfortable with the idea of being governed by the Chief, and Izinduna says (Mr X, 10-06-2019) What stirs the disagreements is the decision taken when it comes to the mining company known as Tendele. These decisions do not favour the majority who are directly affected by the mine activities but instead favour the elite and those closest to them (Mr X, 10-06-2019). It has been alleged by Local NGOs operating in Kwa Mpukunyoni that there have been recorded cases where individuals suffer from respiratory problems, and these are the result of the dust and explosive chemicals that come from the coal mine. The impacts of the Tendele mine on the community and the environment will be covered later in this chapter.

4.4 Competing Discourses in KwaSomkhele

According to Mühlhäusler (2006), discourse is a commonly shared way for humans to understand the world around them. This understanding is embedded in the language, cultural practices, and shared beliefs that we use or experience. Furthermore, this form of understanding is done by perceiving and interpreting the world around us, bit by bit by piecing it all together. This becomes a collective view that we share about the environment around us. This would also apply to how we talk about conservation or mining issues. Mühlhäusler (2006) addresses that, modern-day economics, politics and environmental changes impact discourses, are about what has happened and is still happening in economic politics and environmental advancement (Mühlhäusler, 2006); this section will focus on different discourses visible at Mpukunyoni. This is because they are influential to the community and society at large.

4.4.1 Job creation Discourse

Development is important to ensure that communities benefit adequately from any project. The idea of having development can be regarded as a discourse as more and more people speak one language and see job opportunities opening and having a better society in terms of development, and some see this as a curse that is harming the environment. Tendele claims that it has played an important role in the local, regional, and national economies. Tendele claims that it is the only major employer in the Mpukunyoni community, it is further mentioned that Tendele, directly and indirectly, employs 1,609 individuals in a municipality with some 220,000 residents, the majority of whom are in severe poverty (Tendele answering affidavit, 2018).

According to the company's Social and Labour Plan (2013-2017), the mine would spend R56 million on local economic development to create jobs or training in Mpukunyoni. The evidence on the ground contradicts this. Only 2%, or 3 homes, of the 333 households interviewed in the seven villages directly affected by the Somkhele mine had heard about the Internship, ABET/Learnership, and Bursary programs that the mine has allegedly rolled out in the community over the past five years. The large majority of those interviewed 99.31 percent do not know about the mine's training centre or training programs. Only 0.69 percent of the households in the seven villages visited are aware of the training and have taken part in them.

The Tendele Mine is claimed to have produced direct benefits to the local community members worth billions of Rands. It is speculated that it spent hundreds of millions on socio-economic

upliftment projects education and training, corporate and social investment projects. It is mentioned that the Mtubatuba local community's integrated development plan recognizes that mining is one of the major employment sectors in the Mpukunyoni region and agrees that the Mine has reduced the unemployment rate within the municipality. With the number of jobs, the Tendele mine claim to have provided to the community more places need to be mined and this will alternatively remove the residents to make way for the Mine. It is mentioned that if mining commences in the Emalahleni and Ophondweni areas and later in eMahujini there will be enormous benefits with additional funds in the form of investment of \$ 1 billion in mine development where the majority will be spent on procuring local employment. The above-mentioned employment opportunities offered by the Mine play a vital role in shaping the livelihoods of the Mpukunyoni residents (Tendele answering affidavit, 2018).

The Mine is showing that even though there are impacts, there are benefits, not only through Jojo tanks but also in job provision for the community members. Respondent 8 (10/05/2019) points out that when the Tendele coal mine came to Mpukunyoni it had a significant impact on the individual community members. This is because people were more inclined to go with what the mine offered. After all, that little money blinded them since Mpukunyoni inhabitants suffer from poverty.

The researcher was part of the Social Labour Plans audit conducted at Mpukunyoni by ActionAid. The need to conduct these SLP audits was to identify and look carefully through the Social Labour Plans of the Tendele coal mine for the Mpukunyoni residents. A social audit is a community-led process of examining key documents to see if the mine's expenditures and service delivery outcomes promised by the company accurately reflect the money spent and the experiences of the mining community. The community as a whole participates in the process of evaluating mining documentation by comparing them to the realities on the ground and their own experiences. At a public meeting, the evidence gathered during the audits is presented to the responsible stakeholders. The testimony, expertise, and experiences of the community are legitimate and important aspects of the evidence. A social audit is a tool for developing effective and meaningful engagement in poor and working-class communities by allowing them to participate in the mining process that affects them.

Figure 4.4.2 shows the 7 sampled villages for the social labour plan audit in Mpukunyoni

Item	Questions	Yes	No
Internship	Has anyone in your family worked at the mine as an intern?	8	280
ABET/Learnership	Is there anyone in your family who has gotten ABET training or a Learnership?	11	276
Bursary	Is there anyone in your family who received a bursary	2	286
Local economic development	Has anyone in the family received LED support?	14	274
Agricultural Hub	Is there anyone in the family who knows about an Agricultural Hub?		268
Water provision	Is there anyone in the family familiar with the	2	288

	boreholes in the villages?		
Training	Is there anyone in the family who has received mining training?		286
Maternity Ward	Has anyone in your family received assistance from the maternity ward at Somkhele Clinic?		288

The above social audit results show that the promises made by the Tendele coal mine to the community in their social labour plans contradict the actual results, as will be described further in the discourse section below.

4.4.2 Environmental justice discourse in KwaMpukunyoni

It is important to understand the environment in that people are situated. Muehlhauser (2006) defines the environmental discourse as a linguistic device that articulates arguments on the relationship that people have and the natural environments. It is safe to say that environmental justice discourse occurs when there is a social aspect concerning environmental issues. In other words, environmental discourses are these textual and spoken interactions about the environment. For Dryzek, (1997) Environmental discourse equals environmental issues plus environmental ideologies (Dryzek,1997). Environmental ideologies answer the questions of the relationships between humans and society and what these should be. Dryzek (1997) further mentions that environmental ideology bears major belief systems toward the environment. The objectives and programs of environmental ideologies derive from deep, core beliefs about the environment and analyzing a current environmental situation. This means that relationships

between humans and nature are the key basis of the environmental ideology; this goes further into analyzing current environmental issues and prioritizing them (Dryzek,1997).

Mpukunyoni inhabitants "used to live as rural farmers, and some of them were wealthy," according to respondent 10. 10/05/2019 The Tendele mine's development and operation came without warning or permission from the community, and also without regulatory assessment or clearance.

Respondent 11 10/05/2019 in KwaSomkhele mentioned that *“community members noticed that their environment had been fenced off, restricting age-old farming and herding practices. Their sacred burial sites had been disturbed, their families had been exposed to environmental hazards, their herds had been cut off from grazing, and their homes had been threatened”*.

In the case of the Tendele coal mine, there is an ongoing struggle between the operations of the Mine and its effects on the surrounding communities. As I will show in relation to such issues: environmental disturbances such as water contamination, land degradation and water shortages. Water is contaminated by the chemicals from the blasts; these chemicals are washed away by rainfall which runs off to the streams and alternatively affects the ecosystem. Mr Z mentions *(in the Tendele answering affidavit, 2018) which outline the inversion of home. He cites an environment polluted by dust and noise, as well as dwellings that have been moved or demolished, as examples of irreversible harm done to the Mpukunyoni people, including his own family. He anticipates that if the mine is allowed to operate, it will harm the surrounding environment and its attractiveness*

The contaminated water is harmful to both flora and fauna. As mentioned in chapter 2 land is degraded by the removal or cutting down of trees (deforestation) these activities alter the soil and land is degraded and mining and digging for coal have a huge impact on the soil. Water shortages for the local community are visible in KwaMpukunyoni as the imfolozi river. The water level has dramatically decreased since the mine extracts water for coal washing from the same river where the communities and their livestock depend for water. These issues mentioned above affect the society within the vicinity of the Mine, thus forcing them to change their way of life.

This demonstrates how important it is for the KwaMpukunyoni people to sustain a healthy relationship with the environment. The Tendele coal mine's activities have caused some

environmental changes in the area, which emphasizes the significance of the environmental justice discourse. In contrast to the job creation discourse, we learn that the Tendele coal mine claims to have created jobs, which have influenced the environment and way of life in Mpukunyoni. However, it is critical to remember that mining does provide jobs but at the expense of the environment.

4.4.3 Contestations

There have been conflicts between the Mine, the communities, and with communities themselves which can be termed intra-community conflicts. There have been numerous contestations between the Mine and the community after the community came together to form an organization known as the Mfolozi Community Environmental Justice Organisation (MCEJO). With this organization they were able to take the Mine to court on August 24, 2018, for various reasons; On October 10, 2017, an application was filed in the high court in Pietermaritzburg against Tendele Coal Mining (Pty)Ltd by the Global Environmental Trust (GET) the Mfolozi Community Justice Organization (MCEJO) and a resident of Somkhele in KwaMpukunyoni Sabelo Dladla. In 2018 Youens Attorneys, on behalf of MCEJO, brought an application in the Pretoria High Court to set aside the mining right granted to Tendele Mining (Pty) Limited in 2016 by DMR and to appeal the decision made by Minister Gwede Mantashe in the Mine's favour. This however resulted in numerous protests between the Mpukunyoni community and the Tendele coal mine

This application indicated that Tendele is acting illegally it has no Environmental Authorization issued in terms of Section 24 of the National Environmental Management Act 107 of 1998 ("NEMA ") or any equivalent thereof such as Section 38 A of the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA) as amended. This was the main argument alleged by MCEJO in the Mpukunyoni area. It is further mentioned that Tendele is conducting the mining without any land use authority or approval from any Municipality alleged by the Environmental NGOs. There is no written approval in terms of Section 35 of the KwaZulu-Natal Heritage Act 4 of 2008 to remove or alter traditional graves from their original position. Tendele also has no waste management licence issued by the Minister of Environmental Affairs (Fourth Respondent) in terms of Section 43 (1) or the Minister of Minerals and Energy (Second Respondent) in terms of Section 43 (1A) of the National Environmental Management: Waste Act 9 of 2008 ("the Waste Act") despite requiring a licence because of its activities. With the lack of communication happening on the Department of

Minerals in August of 2020, the parties concluded their exchange of papers and a hearing was set to be on the 5th and 6th of October 2020, but it was postponed until the 16th and 17th March 2021. These were the arguments brought forth by the organization. Unfortunately, there was no success until they went for an appeal which was then successful. However, Tendele Coal Mining's license to expand its Somkhele mine in KwaZulu-Natal was revoked by Pretoria High Court Acting Judge Noluntu Bam on May 22, 2022. The judge mandated that a number of community organizations' appeals be reopened by the Minister of Mineral Affairs and Energy. Tendele, according to the judge, violated the legislation governing public participation.

This section brings a brief highlight on how the Tendele coal mine has affected the Mpukunyoni community. There will be more explanation in Chapter 5 about the contestation between Tendele and the Mpukunyoni community. There has been unrest on how the Tendele performs its operations on the ground and allegations of the ill-treatment of the Mpukunyoni residents.

4.5 Participants' responses on mining impacts.

This section will cover responses from the interviewed participants. The reason for outlining these responses and the impacts is to show the relationships that exist between the Tendele mine and the Mpukunyoni community. The Tendele mine has shaped the lives of the Mpukunyoni residents in different ways. Some individuals were left with memories of what used to be their land (grazing and farming). Moreover, others are still hoping for a better life within the mining environment. It is important to note and understand how residents of Mpukunyoni are affected by coal mining activities, and how these activities shape the future of Mpukunyoni. These impacts have not only changed their lives but interfered with the future of Mpukunyoni. The information provided below is an important part of the thesis because it connects with the overall thesis in explaining Environmental conflict, subjectivity, and socio-ecological change in KwaMpukunyoni. Therefore, the responses from the participants help in dissecting the information into different categories or themes. More of the participant's experiences will be covered in chapter 5.

In the KwaMpukunyoni community house cracks have been experienced since the arrival of the Tendele mine. The residents often mention how these cracks occur and how it feels to be in an uncomfortable environment because of the blasting that happens either twice or three times per week. Blasting is expected in the coal industry to remove overburden so that the

exposed coal can then be mechanically excavated. Most explosives used in open cast mining are loaded into blast holes that have been drilled downwards through the overburdened rock. The blast holes are made to explode in a sequence, and some parts of the energy released are converted to wave-like energy with compression (P) waves, shear (S) waves and surface Rayleigh (R) waves transmitted in all directions from the blasting source (Wilson 1972).

There have been 86 out of the 97 cracked house reports that the researcher came across during fieldwork research and data collection, mentioning that house cracks are prevalent since the operation of the Tendele mine. Eighty-six houses showed cracks which residents claim are the results of the mine blast. In KwaMpukunyoni, house structures are mainly built from mud, which the Tendele coal mine used to measure the distance of the blast. In a poor and rural environment, the house infrastructure is not made to withstand blasts.

There is an allowance that is offered by the Tendele mine to the community of Mpukunyoni for house relocation of R15000 followed by a removal cost of R3000, and electricity connection and installation of R5000 because where they will be placed there will not be electricity and a level new plot of R5000. The communities that were interviewed have responded unpleasantly to what has been offered to them by Tendele coal. The communities believe that their way of life will be disrupted in different ways says (Respondent 12 10/05/2019).

According to the Tendele coal mine, there have been protocols set for the community members to abide by and these are as follows detailed in the letter sent by Tendele on the 8th of December 2017. It states that all existing structures will be replaced with new structures using the following building rates in the area. ” Small house (0 to 40m²) will receive R200 p/m², medium house (41m² to 80m²) will receive R1800 p/m² large house (80m²+) will receive R1700 p/m², and new timber structures will receive R800 p/m². Moreover, the removal of graves is as follows: the cost of 1 cow, 1 goat and R1500 ceremony fees for traditional practices and rights linked to the exhumation of the grave (this is for 1 to 3 graves and every 3 graves after that will ger R1200) (Tendele answering letter 2017).

In KwaMpukunyoni, there is a variety of challenges affecting the lives of the residents. According to the study conducted by the researcher, some of the allegations made by the local NGOs revealed discrepancies between the discourse of the Tendele mine and the Mpukunyoni residents adjacent to the Mine as mentioned in the previous section. The researcher surveyed five communities, KwaSomkhele, Dubelenkunzi, Ophondweni, Emachibini & KwaMyeki, in

the Mpukunyoni area to better understand the socio-ecological changes facing these communities. There are several challenges that the residents of Mpukunyoni identified, and these will be fully explained in this section.

In all the five villages that were surveyed, all 97 participants acknowledged that they are aware of the Tendele coal mine. All 97 participants also acknowledged that they were affected by the Tendele coal mine activities. There are five major impacts identified by the residents of KwaMpukunyoni which are grave relocation, house cracks, livestock, pollution, and water scarcity. Grave relocation is the process of manual excavation of interred human remains. House cracks are a result of mine blasts for coal extraction. Livestock is lost and displaced because there is less grazing land therefore food grass is limited. In this context, pollution is whereby water, air and noise are harmful to the residents. Water scarcity is the lack of accessible clean drinking water. In the subsections below the researcher will explore different responses from five researched villages. When I was conducting my research in the Mpukunyoni community it was visible that the community suffer from noise pollution. During the morning there were at least 30 trucks that passed by and the traffic was at its peak. Imagine those who live near the road and the constant noise from truck engines every morning. Sometimes sleeping early is ideal for most people so that in the morning they do not have to suffer from the noise of the trucks transporting coal.

There are about 40 to 50 trucks per day or even more than transporting coal for individuals who have settlements close to the main road suffer a lot from this. It is also expected to have high volumes of traffic since the trucks are always on the road. This means that one cannot have the luxury of peace, yet a rural area by nature is a quiet place. It makes it difficult to adjust to these settings.

KwaSomkhele Respondents

In KwaSomkhele, 10 of the 30 researched participants in the village were affected by grave relocation. 25 of the 30 researched participants in the village mentioned that their residential structures were affected by the mine blast resulting in house cracks. 25 of the 30 researched participants mentioned that their livestock has been lost and displaced. all of the 30 researched participants reported that they were affected by noise, air, and water pollution. all of the 30 researched participants noted that they lack accessible clean drinking water. All 30 researched were affected by different impacts the reason for this is because of how the community is

structured where there are directly and indirectly affected individuals. There are different sections that the Tendele mine either mined or is still in a process of mining those areas within the community.

Dubelenkunzi Respondents

In Dubelenkunzi, 9 of the 15 researched participants in the village were affected by grave relocation. 12 of the 15 researched participants in the village mentioned that their residential structures were affected by the mine blast resulting in house cracks. 7 of the 15 researched participants mentioned that their livestock has been lost and displaced. all of the 15 researched participants reported that they were affected by noise, air, and water pollution. all of the 15 researched participants noted that they lack accessible clean drinking water.

Ophondweni Respondents

In Ophondweni, 5 of the 23 researched participants in the village were affected by grave relocation. 20 of the 23 researched participants in the village mentioned that their residential structures were affected by the mine blast resulting in house cracks. 10 of the 23 researched participants mentioned that their livestock has been lost and displaced. 21 of the 23 researched participants reported that they were affected by noise, air, and water pollution. 19 of the 21 researched participants noted that they lack accessible clean drinking water. This is due to some residents of the community installing Jojo tanks out of their own pockets.

Emachibini Respondents

In Emachibini 11 of the 11 researched participants in the village were affected by grave relocation. 11 of the 11 researched participants in the village mentioned that their residential structures were affected by the mine blast resulting in house cracks. 6 of the 11 researched participants mentioned that their livestock has been lost and displaced. 11 of the 11 researched participants reported that they were affected by noise, air, and water pollution. and 11 of the 11 researched participants noted that they lack accessible clean drinking water.

KwaMyeki Respondents

In KwaMyeki, 16 of the 18 researched participants in the village were affected by grave relocation. 18 of the 18 researched participants in the village mentioned that their residential

structures were affected by the mine blast resulting in house cracks. 7 of the 18 researched participants mentioned that their livestock has been lost and displaced. 18 of the 18 researched participants reported that they were affected by noise, air, and water pollution. 18 of the 18 researched participants noted that they lack accessible clean drinking water.

The table below shows the summary of the five villages that were surveyed. The challenges that were identified by the residents of Mpukunyoni are the relocation of graves, house cracks, livestock, pollution (noise and air), and water scarcity.

Figure 4.5.1 Main challenges affecting all five villages in the KwaMpukunyoni community.

Associated impacts	Kwa-Somkhele	Dubelenkunzi	Ophondweni	Emachibini	Kwa-Myeki	Total Percentage
Grave relocation	10	9	5	11	16	51%
House cracks	25	12	20	11	18	85%
livestock	25	7	10	6	7	55%
Pollution	30	15	21	11	18	97%
Water scarcity	30	15	19	11	18	93%
Total participants	30	15	23	11	18	100%

The overall researched participants are 97, and 71 of the 97 researched participants in KwaMpukunyoni stated that they do not support the activities conducted by the Tendele mine. 26 of the 97 researched participants stated that they do support the activities conducted by the Tendele mine in the community. In KwaSomkhele 2 of the 30 researched participants acknowledged working in the Mine. However, no specific information was shared with the researcher. Because of the mine policies and fear of being labelled a "sell-out" by the residents that are against the Mine. If one shares information about the mine it is considered an untrustworthy act with severe consequences In Ophondweni, 1 of the 23 researched participants mentioned that they work for Tendele mine and no specific details were shared with the

researcher. The percentages represent the overall impacts within each village based on the sampled participants.

The above-mentioned impacts led to detrimental changes to the social life of the residents of KwaMpukunyoni. Some of the detrimental changes include a lack of grazing land for livestock, the vegetation is no longer safe to consume because it is covered by the dark matter from the coal blasts. The water and vegetation are polluted from coal residuals which makes it hard for both humans and animals to survive in Mpukunyoni. This has resulted in a social change where water is now an economic commodity for the poor.

Conclusion

This chapter explored the history of the Tendele coal mine and background information on how the Tendele mine was established. This chapter highlighted the essential features to give a whole story about the connection between the Tendele coal mine and the people of Mpukunyoni. In the four sections mentioned above, the primary purpose is to understand the changes that the community has experienced with the commencement of the Tendele coal mine. Moreover, how these changes influence the lives of the community members of the Somkhele people. These changes were explained in different subsections, and it came to light that most of the ecological changes experienced made a significant impact on the people of Mpukunyoni. Different discourses were found within the research and each discourse was explained.

Most of the research impacts showed high percentages of affected individuals including house and grave relocation water scarcity and contamination from coal residuals. This chapter gave us an insight into the stakeholder and stakeholder engagement within the Mpukunyoni community. It is important to know that communication amongst stakeholders is very crucial because it will show the success of the project or its failure. This chapter showed that the decision taken by the community leaders sometimes do not work. This chapter also explained different discourses that are present in the Mpukunyoni community and how these have shaped the way people live in the Mpukunyoni community.

CHAPTER 5:

Analysing Community Perceptions and subjectivity in KwaMpukunyoni

Introduction

Poplins, (1994) states that local communities are an essential component in implementing community upliftment and economic empowerment within the community. However, in most cases, project initiators and implementers make the mistake to assume that the community 'speaks with one voice. While in fact, communities rarely share the same views and aspirations (Poplins, 1994). Different factors such as personality traits, individuality, and surrounding environment may influence a person's worldview towards a project. Furthermore, it is vital to study and understand local people's worldviews surrounding proposed and in-progress development. Mutanga et al. (2015) mentioned that perceptions refer to how something is regarded, understood, and interpreted. Perceptions are people's attitudes towards something, and thus, perceptions can be positive or negative. Several factors are associated with coal mining in KwaMpukunyoni. The impacts that these factors have are a severe concern to the Mpukunyoni community

In this chapter, the focus is on the perceptions, experiences and subjectivity of mining-affected communities. I present community perceptions and concerns with some expectations regarding the Tendele coal mine pty (ltd). The chapter further discusses how an individual's perceptions and the Tendele coal mine influence the division among communities. This chapter addresses what it feels like to live in a mining-affected environment emphasizing what the people of Mpukunyoni did not know about the Tendele mine and how it affected and changed their livelihoods. When we look at KwaMpukunyoni, it is true when they say "Ukungazi Kufana Nokungaboni," which means that not knowing is equivalent to not seeing. The people of Mpukunyoni gained knowledge from their experiences living in a mining-affected area. Sadly, no one was aware of the truth of what the mine had promised until their lives changed significantly. This chapter will also focus on the reflections and personal experiences of the people of Mpukunyoni who have been affected by the Tendele coal mine operations and how subjectivity plays a role in mining-affected communities.

5.1. Community: An elusive term

Poplin (1979) mentions that the word community has been used in many ways and described as an omnibus and elusive term. It is described as an elusive term because it is challenging to find a single definition that sums up the complete characteristics of what makes a community. The definition of the word community varies with each discipline, i.e. community in ecology is defined as "a group of two or more populations of different species that are found in one geographical area and in a particular time" (Looijen and van Andel, 1999:230).

For this research, the definition of a community is adapted from the human geography dictionary. Where community is well-defined as individuals who share common values, cultures, and interests based on territory and social identity. Joseph, (2002) further explains that a common geographical area does not essentially define community members, but shared values and interests characterise them. The research has revealed that community members who are not close to one another share similar characteristics. The five researched communities such as Machibini, Somkhele, oPhondweni, Dubelenkunzi and Emahujini have shown that even though they are different communities, they all have similar Traditions and values such as performing similar rituals and having deep connections with their ancestors (will be highlighted and discussed below). There are individual disparities that still exist within the communities (Joseph, 2002). Such as how people eat, every household has its food, and occasionally how people dress, various people have their unique forms of dress code.

According to Madzwanamuse and Fabricius (2004), communities' dissimilarities are prolonged because local groupings continuously redefine and realign themselves. The biggest mistake that the mining project developers made was to assume that all five research communities are the same, and therefore this means that 'one community, one voice'. The assumption of one community, one voice is not ideal for local communities in Mpukunyoni because it often leads to a lot of confrontations between project developers and the local people. As it was applied at Somkhele, where it was claimed that because certain Somkhele residents accepted the mine's offer of compensatory damages, the other villages were required to accept the same conditions.

Our decisions have been made for us, and we no longer have control over what we say. But, at the end of the day, we are the only ones who must bear the consequences of actions we did not make says (Respondent 9)

5.1.1. Kwampukunyoni as a place

KwaMpukunyoni is a large rural area and its community is made up of 30 villages. These villages have a problem when it comes to transport and service delivery since they are situated in remote areas. Mam Khanyile, (4,10,2019) during the interviews mentions that “ *It is difficult for us at Kwampukunyoni to find a stable job, sometimes we have to go to town to seek employment. We get one or two-piece jobs but nothing stable. The worst is that our land has been given to the mine which makes it hard for us to have land for farming*”

The Tendele coal mine project affects seven neighbouring villages in Mpukunyoni, namely, KwaSomkhele, Mahujini, Ndandabantu, Isiyembeni, Machibini, Ophondweni and Dubelenkunzi. All these villages are part of KwaMpukunyoni. Nevertheless, this research is focused on only five of the seven villages mentioned above: KwaMyeki, Dubelenkunzi, Emachibini, Ophondweni and Emahujini. The Tendele coal mine development initiators are not from any of the surrounding communities, and the drivers of the ongoing project (Mr Z) are not from the community itself. Although Mr Z has vast experience in community and mining, according to him, each community is different from the next. One of the main factors that have led to Tendele and the surrounding communities' complexities is the bad history between the locals and the former mining companies that occurred decades ago. For instance, the Emachibini communities experienced unfair and unjust treatment from the former mining companies (JCI Mining (Pty) Afriore Ltd (AfriOre).

During the interview in the data collection, Participant X (04.10.2019) explained how the community has been divided “ *we have turned on one another, people are only looking out for themselves. I was one of the families who refused to be relocated, the next thing I know some group of people within my village wanted to kill me. They were told that I was standing in their way of getting the compensation money for relocation.*” If there is money involved, community members can turn against one another very rapidly.

According to Ward & Brown (2009:1239), rural areas are considered places of tradition rather than modernity, agriculture rather than industry, nature and culture. This definition correlates with the research communities' characteristics, which therefore classify them as rural communities. Nevertheless, the definition provided by Ward and Brown (2009) is objective rather than subjective. Since this study focuses on the socio-ecological changes brought forth by the Tendele coal mine, it is best to provide a subjective definition of the term, rural areas.

According to Morment (1990), rural areas are not territorial units; they result from social production.

The place of Mpukunyoni is viewed as a subjectively sensed and experienced phenomenon; it will be explained in more detail below. This means that what makes a place is human experiences, and without human experiences, we cannot interpret it as a place. According to (Poplin, 1979), human experiences are formed by perceptions of place, senses of place, and human dwelling in and memories of the place. The communities studied, i.e. KwaSomkhele, Dubelenkunzi, Emachibini, Esiyembeni, and Kwamyeki, can be referred to as places. Including the attachment of pain associated with how people are experiencing it from time to time. According to Poplin (1972), the community is characterized by people who share a common culture, values, and interests based on social identity and territory.

When we look at the study area, the people of KwaMpukunyoni, share the same values and interests and have a shared culture. For example, everyone values and respects the chiefs that govern the seven villages; this is not limited to those who somehow disagree with the way decisions are taken and put into operation. According to Participant K *“Even though you are the one who will feel the effects of the mine the most, it is difficult to have some decisions made for you. We do believe in our traditional leaders, but they have let us down, and we bear the costs of their failure.”* The decisions that are taken about the mine cause much discomfort to the people of Mpukunyoni. This is where some question the chief's decisions and try to go against them because if one is in an uncomfortable situation, one will react, and most of the community's reactions are not against the chief but against the decision taken by the chief that brings that discomfort.

5.2 Community Perceptions of Tendele

Community perceptions of the Tendele coal mine are different in each community. The general view in Somkhele, Emachibini, and Dubelenkunzi is that the Tendele brings pain and suffering because they have observed the coal mine's effects and primarily positive in Ophondweni due to being relocated and compensated even though some still argue that compensation was not fulfilling. However, the Mpukunyoni Community's views gradually change to positive to some individuals because most people have no jobs; hence they believe that the money they can get from the mine will make a massive difference in their lives. According to Respondent, 13/10/2019 *“Since our lives have changed for the worse, we do need the money from the mine,*

and after we receive our compensation payments, at least we will have something to start our new lives”.

The researcher identified the main themes in all three communities: relocation and compensation are one of the themes, the dangers of coal residual to water and health is the second theme, and environmental education and awareness is the last theme. The following sections further discuss these themes and how these shaped community perceptions towards the Tendele coal mine. The importance of protecting the environment is perceived differently by different people in the community of Mpukunyoni. This perspective shows the importance of the environment given that everyone depends on it for survival, either directly or indirectly.

"There are no people without the land. Therefore, it is mandatory to take care of what is taking care of us" (Respondent 14, 10/05/2019)

Participant H was born in Mtubatuba in 1983, where he spent most of his life working around the community and being actively involved in community-building projects. He loves music and has recorded a few songs, and a recent one was recorded last year at one of the studios in Johannesburg, which he played in the car throughout the interview. He first observed environmental changes in KwaSomkhele when the first mining company arrived. (according to Participant H). After such changes, Participant H states that the land is an asset, and we should take good care of it. Most people are blinded by "easy money" received when relocated, but within six months, that money is no more, and people are back into more poverty as the land is sold and left with nothing to turn back on.

Participant L makes a point where she mentions how the environment she grew up in has evolved. She mentions how this evolution has shaped not only the environment but the community as a whole. *“Back in the days when I was a teenager we never had food shortages because we use to have a vast amount of land where we grew our crops, plants and our livestock but now times have slowly changed we occupy a small space where we were relocated and the land is not arable for planting. All we praying for is better assistance from the mine and the municipality”.* These changes have altered the way of life in KwaMpukunyoni. It changed the way people lived and gave them a new way of life; some thought this was a way to break free from poverty and what they experienced over time since the commencement of the Tendele coal mine. Life has not been easy; most people experienced hardships, which some

are still battling even today. KwaMpukunyoni is characterized by a high level of poverty and many hardships the community faces (Sis, Zama 08/4/2019).

the area of Mpukunyoni is not advanced technologically because some areas still do not have access to clean and safe drinking water; some still do not have electricity. As a result, some initiated projects do not contribute that much to the communities' needs but only benefit specific individuals within the community. The views of the Mpukunyoni participants show how much they value their environment and how eager they are to go to any lengths to defend their only source of income. Being forced to relocate from one place to another and not having access to fertile land are both stressful circumstances. People's opinions in Mpukunyoni provide insight into how they perceive how the environment has changed through time and how this has impacted their life.

5.3 Experiences of Social and Environmental Impacts in KwaMpukunyoni

This section will cover different aspects and impacts of the environment and social experiences of the people of Mpukunyoni which they endured over the years. Since the commencement of the Tende coal mine, it has been alleged that the individuals have suffered more than they have benefited. The researcher interviewed different people in KwaMpukunyoni just to get a clear understanding of people's experiences and impacts regarding the Tende mine. As explained in Chapter 4 where the actual researched participant's data was presented in this section more evidence will be presented along with testimonials from different individuals at Mpukunyoni.

Summary table of the Mpukunyoni researched villages showing different challenges experienced by the five villages.

Figure 5.3.0

Associated impacts	Kwa-Somkhele	Dubelenkunzi	Ophondweni	Emachibini	Kwa-Myeki	Total Percentage
Grave relocation	10	9	5	11	16	51%
House cracks	25	12	20	11	18	85%

livestock	25	7	10	6	7	55%
Pollution	30	15	21	11	18	97%
Water scarcity	30	15	19	11	18	93%
Total participants	30	15	23	11	18	100%

5.3.1 Cracked houses.

Below is the homestead of respondent 6 who was one of the environmental activists and a resident of the Mpukunyoni area. The homestead of respondent 6 is a few meters away from the coal mine. It comes with so much concern as we can see in the image below how close the mine is to this homestead and the cracks are visible in image B. this is to prove that most of the individuals that are residing in Mpukunyoni are affected by the Tendeles' operations. It is saddening as said by respondent 6 because there are no implementations that favour the directly affected individuals.

“It saddens me what I have experienced I live alone and my family has left me. They say I should accept the relocation money, but what will that money give me in 5 years to come? I can't leave my childhood” respondent 6 (05/01/2018).

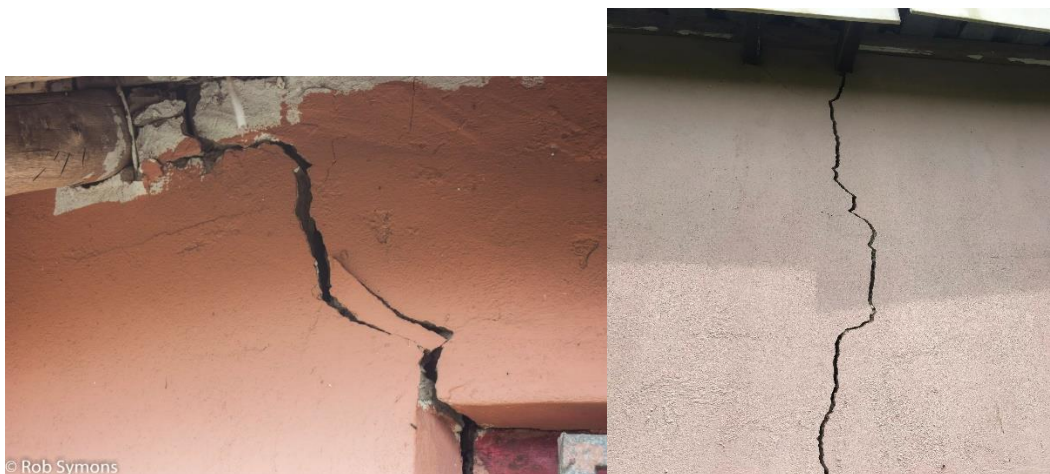


Figure 5.3.1.1 shows a cracked roof in and outside the house (SaveOurImfoloziWilderness)

According to Respondent 7 from Somkhele village “Our houses are collapsing, we fear for our safety, the structures used to build our homes are not strong enough to withstand the vibrations that come from the mine blast. It is excruciating to be in a mining environment because people's lives are not at peace. Every day I wake up to different problems if it is not the dust from the mine pits, it is the noise from the trucks, and if it is not the water with coal residuals and the cracking of our homesteads. We appeal to the mine; they come to check but said; this crack is not from the mine blast. We are greedy, and all we want is a lot of money from the mine,” Said Respondent k on 10/05/2019.



Figure: 5.3.1.2 image of Gideon homestead (Save Our Imfolozi Wilderness, 2018)

When living in a mining environment, house structures play a significant role in determining the damage from a mine blast. The fact that this activity has had an impact on the residents of Mpukunyoni is regrettable. The results of the interviews showed that 85 percent of the villages had house cracks caused by mine blasts. This is a significant number, which highlights the challenges the Mpukunyoni community face concerning the Tendele coal mine. As mentioned in Chapter 2 by Lechner et al., (2016), a land disturbance occurs when mining is involved, which results in damage to property, as shown in this section.

5.4 Experience of household and grave Relocations in KwaMpukunyoni

The impact of house relocation has confused and upset the community because people not only lose their neighbours but also their ancestral land. According to Respondent Z (10/05/2019) we have spent our lives in this community our ritual practices play an important role in our society, if we are relocated we will be in a new environment with people we don't know and this affects our social dynamics.

The amount offered will not cover all the cost that is involved, primarily in the relocation of graves which is a new process and involves a lot of spiritual and ritual cleansing as it is believed to be upsetting the ancestors. The question of who will be compensated by the Tendele to make way for coal extraction seems to be a huge concern. According to this research, 51 of the 97 interviews conducted in all communities have been affected by grave relocations. According to MamaMzizi (10/05/2019) mentions that *“the amount of reliving the pain to rebury someone is depressing and emotionally draining, I have to bury my Husband twice and the amount offered to me by the mine is not enough to cover the burial costs there are different rituals that need to be done in our culture. I have never buried someone twice. This is very heart-breaking for me”*.

According to Mama Mzizi, The process of grave relocations is deemed as disrespecting the dead. It is important to respect those who have left this place (earth) because they are watching over us in the afterlife. Different and costly rituals need to occur to first apologise to the dead for disturbing their eternal peace. Moving them and introducing them to a new and different environment takes more than digging up and rebury someone like they have no value (Respondent 15, 10/05/2019).



Figure 5.4.1 depicts relocated graves placed in an informal and insensitive manner (Save Our Imfolozi Wilderness, 2018).

One of the responses mentioned how hard it is to not be able to recognize the graves of your loved ones because the majority of families in the Mpukunyoni community had experienced grave relocation. According to respondent J (11/05/2019) *loss hits differently different people, but the loss that one will never recover from is the loss of land and the loss of our ancestors. without knowledge, most people sold the land and made way for mining to occur, with hopes that their struggles will come to an end, and they will reap fruitful rewards, little did they know that life had other plans for them.* Life has never been the same since the commencement of the Tendele mine, we are being relocated from one place to another. *We have lost our sense of identity."*

Socially, the relationship between the community residents has transformed into hate and dishonesty. This results in community segregation where one side of the community favours the mine, and the other is on the opposing side, but all experience the same consequences. This includes cultural insensitivity, performed by the mine when they were relocating graves," said Respondent J (10/05/2019)

5.5 Noise pollution from trucks in Mpukunyoni

Noise pollution is one amongst many other factors affecting the quality of life for the people of Mpukunyoni.

Gogo Selina Mathunzi is a resident of Somkhele village she has four children all attending a nearby school but they are always late because there is no transport to take them if there is transport available they still arrive late at school because of the traffic. *"When we sleep at night, we find ourselves scared because we are not used to this lifestyle that we have been introduced to. Our children cry because of these sounds coming either from the mine or through the trucks transporting coal. I wish one of the mine operators can come to spend a week, and they will see how painful our life has become. Unfortunately, they live in a fancy house far away from the mine and let us suffer the consequences of this coal. Yes, we do want development but constantly living in fear of not knowing what will happen tomorrow is a feeling we have learned to embrace. Our lives are not the same, and our kids suffer what future is there for the people of Somkhele"* (Mathunzi 05/10/2019).

Above are the words of Gogo Selina Mathunzi; she has been worried if there is a tomorrow for her grandchildren since there is tension going on since the arrival of the mine. With the noise pollution in place nothing gets easier during the day there are mine blasts and at night the trucks don't stop moving.



Figure 5.5.1 shows the truck moving slowly and settlement near the main road (Save Our Imfolozi Wilderness, 2018).

5.6 Environmental conflict

Environmental conflict can be broadly understood as a social conflict relating to the environment. Robbins (2004: 173) identifies two significant facets of environmental conflict: the first one: is "increasing scarcities produced through resource enclosure or appropriation by state authorities, private firms. Social elites accelerate conflict between groups (gender, class, or ethnicity)" The argument is rooted in three lessons about social ecology from feminist theory property research and critical development studies. Scarcities are the phenomenon where, when a product or service is limited in availability or perceived as limited, it becomes more attractive. There are produced through resource enclosure or appropriation by state authorities, private firms, or the social elite to accelerate conflict between groups (gender, class, or ethnicity)

The second facet is when environmental problems become "politicised" when local groups secure control of collective resources at the expense of the others (e.g., at Mpukunyoni it is known that the land which the residents occupy belongs to the Ingonyama Trust, which means

that the mine is renting the land from the Ingonyama trust ultimately what the mine and Ingonyama trust agree upon will have severe consequences for the community members.

This first facet is the one that applies to the case study of Mpukunyoni, this is because of how the Tendele mine has divided and turned the community against each other. It is alleged by the Local NGOs that the mine is using a “divide and conquer” rule which is to dismantle the community and make them fight against themselves.

Respondent K (10/05/2019) stated; *“I was the only individual who did not want to move but what happened next was very shocking. The mine told the people that were already relocated to other places that they won't get their full relocation amount agreed upon because I refused to move. The next thing I know people are sending threats to me and my family and some even came to my house and told me that I won't stand in their way to prosperity. I had no choice but to keep my family safe so I was relocated”* (Respondent K,10/05/2019).

5.6.1 Community division

In this research, community division refers to how the community is divided. This division usually occurs when there are intra-conflicts within the community. Where one side will oppose the other or vice versa. It is very important to note that such conflicts trigger a lot of unrest and in some cases, people end up killing each other as one side will want to be feared.

On the 24th of August 2018, as explained in chapter 4, there was a court case that which the local NGO took the Tendele coal mine to court alleging that the mine is acting illegally and it has no environmental authorization. All this brought the community to its knees as one side was fully in favour of the Tendele coal mine claiming it had provided job opportunities and the other side was opposing claiming that the mine is destructive to the people and the environment of Mpukunyoni. This proves what Robbins (2004) were referring to in his first facet "increasing scarcities produced through resource enclosure or appropriation by state authorities, private firms. Social elites accelerate conflict between groups (gender, class, or ethnicity)".



Figure 5.6.1.1 This image depicts community division. On the left are Mpukunyoni community members against the mine and on the right are community members supporting the mine (Save Our Imfolozi Wilderness).

Such conflicts have resulted in the community division. It is alleged that some traditional leaders and other government officials exploit and create community divisions. this strategy is used to weaken the critics imposed by the community about a project taking place. According to Leanord (2019), some traditional leaders have sold community rights to mining companies in return for financial gain. In Mpukunyoni, it has been alleged that the Tendele coal mine has caused significant division amongst community members. This was visible during the court case. Some were in support of Tendele and said the "Tendele provides ", whereas some individuals opposed the operation of the Tendele coal mine, stating, "Tendele must fall".

It is very difficult for most of the Mpukunyoni residents to be in a situation where one is forced to take sides. According to respondent 6 (10/5/2019) *“Our lives are no longer the same, our neighbours no longer talk to us only because we don’t agree with some of the Tendele mine decisions. It is very difficult for us and our culture, as Zulu people are kind-hearted individuals but now all we have is hate amongst each other and such hate will be passed on from generation to generation. Will we ever have peace, maybe after the mine but it will be too late.”*

5.7 Experience of Environmental defenders in Mpukunyoni

Environmental defenders play a significant role in their land protection and climate against destructive business practices. However, more environmental defenders and being threatened, attacked, criminalised and most importantly, killed. Project managers and businesses and governments must protect environmental defenders and bring those who put harm to justice. According to Le Billon, (2021) The phrase environmental defenders and land defenders" was

used to refer to environmentalists and lawyers who are fighting harmful projects in courts. In this section, there will be a focus on the individuals who have been affected by the Tendele coal mine while fighting to preserve the environment for future use. It is not only limited to those that are solely fighting for environmental equity but to those that see the need for the three pillars of sustainability and how the ongoing project Should abide by the rules and regulations of South African law.

It is important to note that environmental defenders in this research are individuals who voluntarily wanted to defend their environment and have not received any form of payment. The only payment some received was the loss of their lives. It is difficult to understand the extent to which the project developer would go to make sure that their project is accepted by the community. And as for the Mpukunyoni community, there has been bloodshed concerning some intra-conflicts which would not have occurred if the Tendele mine was not present.

On the 25th of February 2018, Respondent 5 was an Activist and Environmental defender well known at KwaSomkhele for challenging Tendele Coal Mine. Respondent 5 used to work for the mine some people in the community call him a “sellout” someone who uses other people for his gain but he also forms part of the community as he was always challenging the decisions of the mine and always trying to do better for the community respondent 5 received threats through a gruesome dead cat's body found in the middle of his yard. Such intimidation is not the only time he received such threats. In 2016 his vehicle was set on fire. Like other community activists, he refused to be intimidated or discouraged from fighting for economic, environmental, and social justice.



Figure 5.7.1 depicts respondent 5 burnt mini-Truck by unknown individuals (Save Our Imfolozi Wilderness).

On Thursday, the 16th of May 2019, Mr V died due to health problems. These health problems are associated with the proximity of which his homestead to the mine such as the dust from the mine which affected his lungs. Respondent 11 was known in the Somkhele village and loved by many. He emerged as a man of courage when the Tendele mine expanded into Kwaqubuka, and respondent 11 home was identified within the mining area and was granted permission to mine. Respondent 11 was then instructed to relocate; there was no alternative land provided for him to inhabit. Respondent 11 rejected the offer made to him by the mine, and he refused to move. The mine started its operations within 300 metres away from his homestead, but that did not shake respondent 11. All the buildings and property were cracked and had severe collapse from the mine blasting.

On Friday, the 24th of April 2020 in Ophondweni a grandmother and her family were targeted by a terrifying bombardment of bullets that pounded walls and came flying through the windows. Furthermore, precisely a week before, on the 17th of April 2020, on Friday evening, two gunmen entered the home of Mr P, a young leader with the Mfolozi Community Justice Organization who is challenging the expansion of the Tendele coal mine. It is said that the gunmen asked if the young man was Mr P, to which he replied that he is not Sabelo and that Sabelo was away. They tied him up and assaulted him. They entered Mr p's widowed Mothers's bedroom and asked her and Mr p young niece where Mr P was. They all said he was away. The gunmen continued to search the house for valuables; they took binoculars and mobile phones (Save Our Imfolozi Wilderness). Moreover, they demanded whatever money the family had. After that, they left. A case of armed robbery was opened at the KwaMsane police station; sadly, no arrests were made, and Sabelo and his family must go into hiding (Save Our Imfolozi Wilderness).



Figure 5.7.3 shows bullet holes in the window at the upper left corner of Ophondweni (Save Our Imfolozi Wilderness).

On the 22nd of October 2020, Mrs L was shot in her home at Ophondweni near Mtubatuba. Mrs L was the Vice-Chairperson of a sub-committee of the Mfolozi Community Environmental Justice Organisation. As mentioned previously, MCEJO has been challenging the Tendele coal mine in its various activities that disturbed the environment in KwaSomkhele. On Thursday, the 22nd of October 2020, at around 18:30, four gunmen arrived at Mrs L's house, where her 11-year-old grandson lives with her. Reports state that the four gunmen forced themselves inside her home and shot her five times. She died on the scene. It is also believed that Tendeles coal mine operations have caused untold destruction of the environment, homes, and livelihoods of the residents of Somkhele have changed ever since the arrival of the Tendele coal mine. The Tendele Coal Mine reportedly denied any involvement in Mrs L's death and offered to help the police with their investigation in any way they can. however, the community continues to hold Tendele responsible for Mrs K's death. (Save Our Imfolozi Wilderness).

5.8 subjectivity of mining adjacent residents in Mpukunyoni

The Tendele mine has been a source of Environmental disturbance for the Mpukunyoni Community. The impact of the Tendele Mine has affected how residents of surrounding communities think about themselves and their environment. According to Brown (1980), "subjectivity refers to experiences that are mental and cannot be measured. These include how one feels about a particular subject and how it influences their emotional well-being". This section will look at the psychological effect that the people of Mpukunyoni endured due to the Tendele mines operation.

Living in the vicinity of the mine does not mean one will have a good and prosperous life for the majority of people at Mpukunyoni. It consumes your soul, and it changes the way you see life. It makes one wonder if they will make it to tomorrow, but some hope and wish that their kids have a different future than their present say (Respondent 15,10/05/2019).

As mentioned in chapter 1 that Agrawal, (2005) states that environmentality leads to the emergence of environmental subjectivity which directs people to care about the environment. It is also understood that environmental subjects are those individuals whose actions and thoughts are centred around the environment and how they view the environment. Environmental subjectivities analyze the process by which individuals develop and rebuild a set of discursive interactions with nature. The emphasis on environmental subjectivities creates local contexts within which environmental discourse narratives such as Anthropocene. This will help in understanding how new subjectivities emerge when people's livelihoods and lifestyles are threatened. As Gregory et al, (2011) mention in terms of subjectivity, poststructuralist theories see it as a complicated interaction of local geography and processes that produce and differentiate an individual subject (Gregory et al, 2011).

Edelstien (2018) conducted a psycho-social impact assessment with the Tendele coal mine. The purpose of this report was to address the psycho-social impacts associated with individuals living in proximity to the Tendele coal mine. Edelstein is a psychologist at the University of Buffalo and has worked in the field of Environmental psychology in his entire career. During his quest to understand the psycho-social impact in Mpukunyoni Edelstein interviewed one of the environmental activists by name of Participant 1 who has been part of the Mpukunyoni community since 1983. According to Participant 1, the people in the communities were healthy and had few complaints, in recent years there has been a growth of complaints about respiratory

diseases, asthma and bronchitis. The quality of their lives has been dramatically affected” (Edelstien, 2018).

Below is a summary of the findings of the psycho-social impact assessment conducted by Edelstein based on the Impacts in Mpukunyoni

Lifescape Impacts

- People in Mpukunyoni don't feel healthy. A review of the questionnaires provided an emphasis on this idea. A significant number of diseases, including birth defects, are documented among families. Breathing issues, asthma, coughing, and other respiratory ailments are among the most often reported illnesses. And this is alleged to be a result of their surrounding environment and most of these individuals are directly affected by the tendele coal mine *Alleged by Participant 2 in the research.*

Impaired Livelihood

- Before the mine was established, the Mpukunyoni Community practised sustainable traditional and agricultural activities. Aside from farms, there were minor enterprises like repair shops. The shops and farms are no longer there. None of these livelihoods could be pursued after most of the land was taken and fences were erected Narrated by respondent 3 in the research study.
- The questionnaire analysis also shows that the traditional livelihood of Mpuknyoni inhabitants has been affected by the outcome of land loss, water scarcity, and soil contamination caused by the Tendele mine.

Social Distrust

- *Participant 4* state that it is common in cases like this for individuals who have been harmed to distrust all of the key actor's corporation that has destroyed a long-standing way of life and the local environment, as well as the state and municipal officials who have allowed them to do so. Often, distrust stems from what Edelstien refer to as the Eco-Historical context.
- The tendele mine made promises to the traditional council about its intended operations of the open cast anthracite mine. The traditional council believed them and issued

consent without involving the community members. As a result, the community was blindsided by the mine.

Lifestyle Impacts

- The Tendele Mine has disrupted the normal lives of residents of Mpuknyoni in numerous ways says *participant 5*
- Massive blasting noise occurs twice a week, sometimes with a half-hour warning but more often without. The ensuing vibration rattles windows and shakes entire houses.
- Rainwater is traditionally collected and stored in drums by the families. However, once the mine commenced operations, the water became contaminated with coal dust and became unfit for human consumption. Residents were forced to travel to the mfolozi river for water.

Environmental stigma

- The Tendele Mine has affected the value of place and property, and consequently of the individuals who live in, own, or are affiliated with affected areas. A once-beautiful environment has been transformed into an unstable moonscape, devoid of life and sustenance.

There have been individuals who have sent through their testimonials about the effect of living in a mine-affected community a few will be presented below to show the magnitude of the Tendele coal mine effect on the surrounding community members.

Mr S states that *“living in a coal mining environment does not only affect you physically but emotionally and psychologically. I have lost my land which Is a physical entity but what came after was imaginable pain I felt as I could not believe that I was robbed of my life had changed for the worst I wish I never met the Tendele coal mine. I have no livestock I use to sell through my farm harvest but now we don’t know what to do all we can do is to hope for a better life and trust in God maybe our prayers will be answered”* (Save our Imfolozi Wilderness).

Miss F is an Environmental Activist her family graves were relocated, and it has not only made her re-live some of the painful moments of those that passed on, but she was unable to recognise her family graves. *“My life changed when the Tendele coal mine promised us a better life but right now we don’t know what our ancestors think about us. I have lost hope”*

(SaveOurImfoloziWilderness).

As we have explored the impacts endured by the Mpukunyoni residents there are different idiomatic expressions used to express such. This research encompasses a cultural idiom which is the isiZulu idiom; it came up when I was doing my data collection. One of the participants made use of this idiom which became the key theme of this thesis. The term used was “Ukungazi Kufana Nokungaboni”, which means that not knowing is equivalent to not seeing. It is difficult to understand something that you have never been exposed to before, it makes you believe anything anyone tells you. Which is what happened to the people of Mpukunyoni. They didn't know the dangers or impacts that are associated with coal mining all they heard was job creation. From that moment they believed life will change for the better.

To fully understand this idiomatic expression, “Ukungazi Kufana Nokungaboni,” not knowing is equivalent to not seeing; we first need to understand what an idiom is. According to wise (2018), an idiom is characterized as a string of words whose semantic interpretation cannot be derived compositionally from the interpretation of its parts. In other words, this means it is a phrase with a meaning that is different from the meanings of each word in it. A cultural idiom is when an idiom is used in a particular cultural sense to express indirectly one's view about a particular situation. Usually, cultural idioms are used to agree or disagree respectfully with a particular situation or to express one's emotion respectfully (Wise, 2018).

Another interesting idiom that was introduced during data collection is Ikhiwane elihle ligcwala izibungu, which means that the nice fig is often full of worms, the meaning of this idiomatic expression is to warn people who are fond of focusing on the good side of something and forgetting the negative side. Just like how most people in Mpukunyoni focused on what was at hand or what was given to them by the mine, which was promises made that shaped their lives with scars that remain uncovered. The last relevant idiom would be that of; ukubona Kanye ukubona kabili, which means that once you get into an unpleasant situation, you learn the art of being cautious. This will contribute to future references and for the people of Mpukunyoni never to repeat the mistake of allowing what is seen as excellent and life-changing without proper research or asking the right questions about what is proposed to the community.

The main reason for using the above idiom is its equivalence to the research itself; it embraces all forms of uncertainties and the untold truth.

Conclusion

This chapter has provided evidence that there are discrepancies. The results revealed the discrepancy between the mine and the affected of KwaSomkhele. The results indicated that the Tendele coal mine's Emerging socio-ecological impacts have harmful effects on the community of Somkhele. This section provided information to support that the Mpukunyoni community is a politicized environment due to the emerging socio-ecological impacts. This chapter showed how environmental conflict influences a society's division and how it impacts the Mpukunyoni community's livelihoods. This chapter also provided information on the dangers of environmental defenders and how some have lost their lives fighting for a healthier and cleaner environment.

The chapter provided an insight into how it feels like to live in the proximity of a mine. The people of Mpukunyoni demonstrated an amount of pain not physical but emotional and psychological pain. It is important to always understand that people come first and the environment needs protection. The community perceptions of the Tendele coal mine show that the mine is doing good in certain areas as some local people are employed by the Tendele coal mine allegedly.

This chapter has introduced the idiom “Ukungazi, Kufana Nokungaboni”, meaning Not Knowing, which is equivalent to not seeing. This idiom expression is used to describe how the people of Mpukunyoni were narrow-minded about the mine. They believed all that was brought before them and forgot to do their homework on how a mining company operates, what changes the mine brings to the community, how long the duration of a mining project is, and the after-effects of the mining project mine. All these questions were left unanswered until changes started to happen, and people slowly asked questions that enable them to re-evaluate their stance with the mine and demand equity for all individuals.

Chapter 6

Conclusion and Recommendations

Introduction

This chapter provides a summary of the key findings emanating from this study as well as recommendations and concluding remarks. The key findings and recommendations presented below are discussed concerning the objectives, aim and research questions that framed the current study. The qualitative research method allowed for the identification of key trends and a narrative that attempts to unpack these patterns. The summaries provided below elaborate on the key concepts discussed in the Political ecology framework that guided this study and themes that were discovered in the researched areas. The findings also reflect on the aim, objectives and research questions identified during the initial stages of this research and listed in one and respectively. The study examined the environmental conflict, subjectivity, environmental subjectivity and socio-ecological changes of mining-affected communities in KwaMpukunyoni.

6.1. Summary of the key findings concerning the aims and objectives of the study.

This section summarizes the research's key findings concerning the study's aims and objectives, which are described in Chapter 1.

6.1.2. What are the social-economic and environmental impacts of the Tendele coal mine in KwaMpukunyoni?

Some areas of Mpukunyoni have changed, and the Tendele coal mine is credited with this change. It is said that 1,500 people are directly and indirectly employed by the Tendele mine. The Tendele mine has additionally claimed that it has provided scholarships to the local communities to help students continue their education. Additionally, it is claimed that the Tendele mine's educational system has led to an increase in community improvement initiatives like computer literacy and farming education. According to the research study, the social-economic impacts include the relocation of graves and house cracks. As reported in the research study that grave relocation is the process of manual excavation of interred human remains and the total number of research participants who have been affected by this act is 51 out of the 97 sampled. This has proved that out of the sampled villages, half of the sampled population have

suffered from their loved ones who have passed on being exhumed and re-buried disrespectfully according to the different cultural practices. House cracks have been reported in the study which accounted for 86 participants out of 97 overall sampled participants. This has shown that individuals do suffer from this impact.

The environmental impacts of the Tendele coal mine in the KwaMpukunyoni community include land degradation, water scarcity, pollution (under groundwater), plant pollution and noise pollution. It is reported that these are the environmental impacts produced by the Tendele coal mine on the Mpukunyoni community. These impacts as indicated in the study have altered how villagers can coexist with the mine since their environment is polluted and it appears that there are no methods used to rehabilitate the area of Mpukunyoni according to the community. The research indicated the subjectivity of the Mpukunyoni community to the activities of the Tendele coal mine and how the community reflects on these issues

6.1.3 To examine the social and environmental changes of coal mining at KwaMpukunyoni, from the perspective of the mine adjacent residents.

The results from the study showed that the villages in the KwaMpukunyoni community are affected by similar social and environmental changes of the Tendele coal mine such as environmental disturbance, water contamination and grave relocation. The difference between social and environmental change is based on the proximity of the villages to the coal mine. Findings from the research study showed that there are detrimental changes to the environment and social life of the residents of KwaMpukunyoni. Some of the detrimental changes include land disturbance, ecosystem dysfunction, lack of grazing land for livestock, and the vegetation is no longer safe to consume because it is covered by the dark matter from the coal blasts. The water and land are polluted from coal residuals which makes it hard for both humans and animals to survive in Mpukunyoni. According to the research study, 97% of the respondents suffered from water pollution and 51% of the respondents experienced social difficulty due to the Tendele mine activities. There is an upset about the social way of life as new workers are coming into the community from different cultures. This has resulted in a social change where water is now an economic commodity for the poor. Due to a scarcity of water in the Imfolozi river, community members often buy clean and safe drinking water in the surrounding town. As mentioned in chapter 4 there is evidence from the researched participants that water scarcity is the second-highest impact affecting the community with 93% of the respondents that suffer from either a shortage of water or the water is contaminated and unsafe to drink.

6.1.4 To contrast accounts of change put forward by the mining company, on the one hand, and activists on the other, and compare these with the experiences of the villages of Somkhele, KwaMyeki, Emachibini, Ophondweni, Dubelenkunzi.

The research study showed interesting results when looking at the changes brought forward by the Tendele coal mine to the Mpukunyoni community. Findings have indicated that there are competing discourses one is a job creation discourse where Tendele coal mine has provided the Mpukunyoni community with employment and business opportunities. And other small business individuals have worked for the mine. There have been developments within the Mpukunyoni community. The research study also revealed that there is an environmental justice discourse in KwaMpukunyoni, with activists and the five sampled communities expressing differing views on environmental changes such as environmental degradation and water pollution. The activist argues that these changes do not correspond to the changes outlined in the Tendele coal mine social labour plans. According to environmental activists in KwaMpukunyoni, it is alleged that the number of employed, or employment opportunities is exaggerated. The study indicated that the experiences of the five sampled villages in KwaMpukunyoni reflect differently from what the Tendele coal mine is stating. The villagers argue that their needs following the Tendele social labour plans are not met. The social labour audits conducted by ActionAid and the researcher proved the villager's concern to be true as they revealed that the Tendele mine has not lived up to the promises it made on its social labour plans which have resulted in community unrest and protests as mentioned in chapter 4. Within the Mpukunyoni community, there is subjectivity. Subjectivity relates to how members of a community express their feelings, problems, and frustrations about living in a mining community. That is evident in Chapter 5 when individuals express their feelings regarding the Tendele coal mine and how it has influenced their way of life.

6.1.5. To interpret a change in the Mpukunyoni area through the political ecology approach. The related objectives are to understand the changes associated with mining-related to

The research study indicates that there has been a change in the Mpukunyoni area using the political ecology approach to understand the influence of the mine on the community and the environment. It is understood that the political ecology approach at KwaMpukunyoni looked at how mining activities of Tendele are influenced by power relations and focused on how the Mpukunyoni community and the environment interact with observable environmental impact. The study showed that the observable changes in the local livelihoods of the proximate

villagers are not the same. Using the political ecology approach to address this change showed that most of the villages in proximity to the Tendele mine have their livelihoods changed, most people are used to having land to farm and graze however this is no longer possible since most have either, been relocated to other villages or their land is taken by the mine. This alters their livelihoods as they cannot perform their day-to-day needs. The political ecology approach showed that through environmental change the society of Mpukunyoni cannot fully function to its best capacity due to the experienced changes.

- **What are the Communities perspectives of different stakeholders in the mining-affected communities?**

The study revealed that there are different stakeholders in the Mpukunyoni community, and these stakeholders perform different roles. The villagers in KwaMpukunyoni have stated in the research study that they feel less motivated to put their trust in the stakeholders. This is due to the decisions that resulted in the transformation of their environment and a change in their social-economic. As stated in the study villagers in KwaMpukunyoni have resorted to forming their own NGO Known as MCEJO this NGO helps to voice the frustrations of those affected by the Tendele coal mine activities. The study revealed that people in the sampled villages have different perspectives about the stakeholder and their response is in line with the benefits they received.

- ***Observable environmental impact over time.***

The observable environmental impact in the Mpukunyoni community indicates how the environment has changed from time to time. It is evident in the research that the environment has changed through the activities of the Tendele mine. The environment has been altered which resulted in the community having second thoughts about the continuation of the Tendele mine. This impact has not been corrected or rehabilitated according to the Mpukunyoni residents. However, the mine is set to continue with its operation regardless of the impacts that have been reported by the community. This shows how power is influencing the outcome of the environment

- **Observable changing social relations between traditional authorities and adjacent villages.**

The study showed the changes in social relations between traditional authorities and adjacent villages. It was documented in the research that most of the villages fear the traditional

authorities because if they express different views there might be repercussions to follow. This has led the relationship to be a little dysfunctional where there is no transparency between the traditional authorities and the community. There is a lack of trust, and some community members feel controlled. But it was also reported that in other villages the relationship is mutual. The traditional authorities favour different villages according to some of the residents in KwaMpukunyoni. The mine and traditional authority have a healthy relationship since the mine always addresses the traditional authority when there are changes to be made or new prospects to be explored.

6.2. Recommendations

The research study explored Environmental conflict, subjectivity, and socio-ecological changes in mining-affected communities in KwaMpukunyoni. The research also focused on the relationship between the mining-affected community and the Tendele coal mine and how they coexist. The research has only touched on the basis of a much broader topic of living in a mining environment. The recommendations which are provided below can be taken into consideration when exploring a broader aspect of communities adjacent to the mining environment.

Maintaining a positive and secure working relationship with the communities most projects that are undertaken in communities fail due to a lack of communication. As a result, there is a conflict between the communities and the project developers. A good and secure relationship can be obtained by actively listening to the local community's issues, engaging in a comprehensive discourse, analyzing every aspect of the conversation to ensure that the community's demands are addressed, and conveying to the community what they can expect. If there is no constructive relationship between mining stakeholders and the community, resentment may progress to severe problems.

Provision of environmental education and awareness programs- knowledge is power, this concept is applicable when implementing programs that will educate the community such as social labour plans. People who have information find it easier to make judgments that are best suited to their needs and environment. It will be easier for the communities to have a clear resolution if there is an understanding of coal mining and how it affects the environment, as well as what steps will be made if this occurs.

Promote the use of the environmental justice approach to ensure that there is fair treatment of the community. Be honest about the community's budget to the community- as it was discovered in this study, the community had to do their inquiry to gather the company's expenditure on community infrastructure. It is critical to inform the community about the budget, how it operates, and where the focus areas will be. Respect for communal land rights and communal rights- if the mining company respects the rights of the communities while a project is in progress, the number of conflicts will be reduced.

Lastly, it is critical to understand the culture of respective cultures. This will reduce the number of conflicts and make resolutions much clearer. Always have someone who speaks the local language or tries to grasp the local language to eliminate any communication barriers.

6.3 Conclusion

Project managers in the coal mining industry do not adequately consider the views of the communities affected by the mining environment. The purpose of this research is to better understand the ideas and perceptions of mining-affected communities in KwaMpukunyoni about environmental conflict, subjectivity, and socio-ecological changes experienced through coal mining. Using qualitative methods such as questionnaires, interviews, oral testimony, and observation. The community's perspectives on the mine's activities were studied, showing developing themes such as community conflict, environmental change, social change, including subjectivity were articulated. The study found that community members accepted the project to go occur due to financial constraints and a lack of awareness about what to expect at different phases of the project. The community heard about the benefits of job creation and community development but did not consider what may happen if the mine did not deliver those commitments. However, the community began to face difficulties as they were no longer able to access their land to plant or graze livestock. Some sold their livestock, while the others died due to a lack of sufficient grazing land.

The study revealed that the Tende coal miner's views on the Mpukunyoni community and its project informed that the mine committed to the Ingonyama Trust and had minimal communication with the community as it was revealed during the court case that the mine had sent money toward community development, but the community stated that they did not know of it. The mine also played a big part in escalating tensions in the community, where they are accused of employing the divide and conquer strategy. This will cause the community to battle amongst itself, diverting attention away from the mine's problems. The biggest issue for the leaders of both the Mpukunyoni community and the Tende project leaders is that there is no communication between the two. The community will believe what the mine representatives tell them, and the mine will believe what the community representatives tell them, which is frequently confusing and inaccurate owing to communication breakdowns. Despite its limitations, the study's findings provide insights into the complexities of communities around mining areas and how these complexities can be better understood. Based on the findings, it is recommended that a grassroots-level strategy be used to enable full community participation throughout the stages of the implementation of the project.

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